American Machinist

New York, July 16, 1925

Shop Equipment Review

Semi-annual résumé of machines, tools and accessories described in the Shop Equipment News section of the American Machinist during the first six months of 1925

Principal Developments in Shop Equipment

THE developments in shop equipment for six months, dating from the first of the year, are covered in this, the fifth semi-annual review number of the *American Machinist*. The period witnesses the marketing of 277 items in all divisions as compared to the 266 total for the last half of 1924, and indicates a normal demand as well as a steady desire to improve facilities.

There is a marked trend, in special design, to build machines that are adaptable through minor changes to a range of usefulness beyond their primary objective to give the user the maximum of machine-tool-dollar value as pertains to the flexibility of any installation.

Numbers of builders have gone over their standard designs and have made alterations and additions, giving consideration to the problems of actual operation. It is a natural outcome that centralized control has been built into the machines and tools. Coupled with this has come a demand for safeguarding actions by positive interlocks and limit-stops.

Power transmission from one central drive to component parts, with its attendant complications, is giving way to the use of unit motors mounted to direct-drive these parts independently and is resulting in simplified design and more efficient use of power. The demand for remote and push-button control with electrical interlock, made necessary by the multiple-motor application, has been ably met by the makers of electrical-control equipment.

Ball Bearings More in Evidence

Ball and roller bearings, principally the former, continue to grow in favor, some of the makers including this design throughout and others proceeding surely toward that end. Ball bearings appear on 34 per cent of the 146 machines on which they can be used.

Individual guards, unprotected driving motors and exposed shafts are gradually being eliminated by inclosing units and motors within the machine frame and by making use of direct drives. The result is an increased number of machines that may be classed as complete units.

In general, the automotive industry has received the greatest attention, but the railroad shop and other lines of manufacture have been well provided for.

There is a boring mill with separate motors for drive and adjustments, with fully-centralized and protected control, with unit lubrication and of extremely rigid construction.

There is a drill with motors mounted direct on the several spindles. A multiple-spindle machine carries four heads, in as many planes, to drill 68 holes simultaneously. It has two motors and forced lubrication.

A cylindrical saddle-type grinder illustrates central control, thorough lubrication, distribution of weight and inclosed drive. A centerless grinder carries two motors and a generator.

There is a lathe in which all the gears are of chrome-nickel steel, cut helical and heat-treated. Another swings 300,000 lb. on its centers, includes eight motors to drive its component parts, and has a complete grinder mounted on the rear of the bed.

Two milling machines have driving motors mounted in the bases.

Size, as well as centralized control, is in evidence in the planer and shaper and the press divisions. A shear will cut 9-in. round billets. A planer cuts in both directions.

Developments in Other Machines

Many items of interest and wide application are listed under threading machines, other machine tools and other machines, where again the features of modern design show to advantage. Four automatic chucking and turning machines are listed, among many others.

Several of the woodworking machines have the motors mounted directly on the work spindles. One company has announced a special motor of unusual design for this service.

Material-handling equipment includes, among other devices, a chain hoist with the load sheave supported on ball bearings, a crawler-type crane and a tractor with a telescopic crane boom.

Measuring, gaging and testing equipment, aside from a normal growth, is marked by the introduction of a number of optical measuring instruments, of foreign manufacture, which are going to make a strong bid for altering a number of present practices.

Electrical equipment includes a planer drive of note and a number of starting and control items and heating units. Bearings show development in metals, lubrication and accessories, aside from bearings proper. There are many items of value in the miscellaneous section.

The most marked development in the miscellaneous equipment and supply division is that of speed variators to meet the increasing demand for direct-geared drives.

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Boring Machines

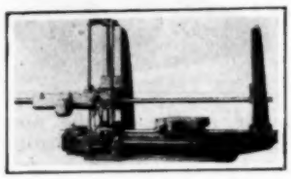
—1—

Boring Machine, Horizontal, Milling, Drilling and Tapping, No. 6

Defiance Machine Works, Defiance, Ohio. [Vol.62,p. 596.]

The No. 6 embodies all of the features of the company's regular line but increased in size commensurate with the larger work for which it is intended.

The head, feed and speed boxes are of unit construction and inclosed, the gears running in oil. Spindles in



the latter two are equipped with Hyatt roller bearings. The control levers are centrally grouped. Rapid traverse is provided and interlocked with the power feed movements.

The platen is designed with rollers under its overhanging ends that ride on hardened steel rails on the bed. The 4½-in. diameter spindle has a maximum horizontal travel and a vertical adjustment of 60 in. The maximum distance from the face of spindle to tail block is 9 ft. and 6 in. The 36x64 in. platen has a 64-in. crossfeed. There are 10 speed changes ranging from 7½ to 157 r.p.m. and 12 feeds per spindle, spindle head, saddle or platen from 0.004 to 5 in. per revolution of the main spindle. A 10-hp., 900 to 1,200 r.p.m. motor is recommended for the drive. The machine as shown weighs 3,000 pounds.

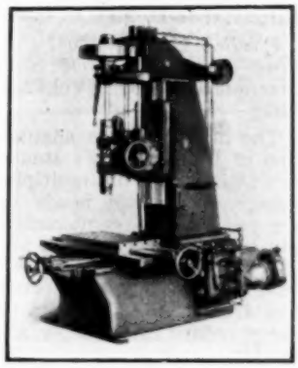
—2—

Boring Machine, Jig, Improved Design

Pratt & Whitney Co., Hartford, Conn. [Vol.62,p.554.]

Several changes have been made in the original design, chief among which are the heavier column and column head, the more compact spindle speed gear box, the larger spindle head and the simplified and strengthened measuring devices. The machine is primarily intended to perform operations in the manufacture of jigs where very close limits of accuracy are essential and where the cost of the work must be kept within reasonable limits.

There are eight spindle



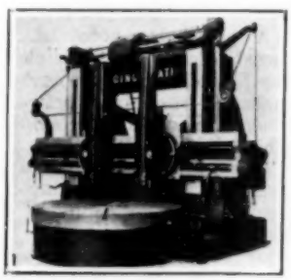
speeds ranging from 22.2 to 300 r.p.m., and four speeds from 0.0025 to 0.010 in. per spindle revolution, controlled by levers conveniently located. Hand feed and rapid traverse are available in both directions. The table measures 16x30 in. and has a longitudinal travel of 24 in. and a traverse limit of 18 in. It occupies a floor space of 5 ft. and 10 in. by 7 ft. and 1 in., and stands 8 ft. and 10½ in. high.

—3—

Boring Mill, 8-Ft., "Hypro"

Cincinnati Planer Co., Cincinnati, Ohio. [Vol.62,p. 709.]

A view of the operator's side is shown. The motor-driven rail-lift mechanism which is set in operation by manipulating a control lever to a dog clutch in the rapid-traverse assembly mounted on top of the



machine, the rapid power-traverse which is operated by control levers mounted at the operator's position on both sides of the table, the quick-adjustment handles on the traverse screw and on the feed shaft in the rail on both sides of the table, and the arrangement provided whereby the operator can make the positive speed changes from his position by manipulating two vertical levers have been featured from a standpoint of operation.

All of the driving gears in the box are of steel, and the drive assembly includes clutches for speed-change combinations. The back-gear shaft extends through the front of the box and terminates in a third bearing in the main machine bed. The table-pinion shaft also extends from the bed to a third bearing in the speed-gear box. The bevel driving pinion is mounted between two of the bearings so there is no overhang. It is made of chrome-nickel steel and heat-treated. The wide face housings are bolted to box-type extensions on the side of the bed. A box-type arch ties the housings together at the top, and with the strength afforded by the feed box at the bottom and X-braces on the back give the machine a maximum of strength and rigidity.

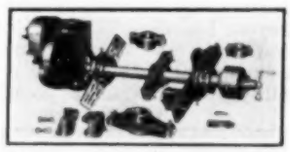
All bearings are bronze bushed and have ample facilites for oiling, oil cups and oilers having been displaced wherever possible by the use of centralized oil distributors.

—4—

Boring Bar, Cylinder, Portable, Motor-Driven

E. J. Rooksby & Co., 1072 *Hamilton St., Philadelphia, Pa.* [Vol.62,p.906.]

The portable, cylinder-boring bar has a motor mounted on a base on the gear-drive frame, forming an integral



part with it. The unit is furnished with either d.c. or a.c. constant-speed motors.

Two tools may be placed on opposite sides of the bar on the cutterheads that are fed along the bar by an inclosed feed box. There are two feed changes. The equipment is made in sizes to bore bushings or cylinders from 7 to 48 in. in diameter, and ranges in weights from 800 to 2,600 pounds.

Drilling Machines

—5—

Drilling Machine, Variable-Speed, Viktor

Henry & Wright Manufacturing Co., Hartford, Conn. [Vol.62,p.177.]

The machine is adapted to either belt or motor drive, the motor being mounted on a special flange directly on the side of the column in place of the tight and loose pulleys shown.

From a two-step cone at the top of the vertical shaft a 2-in. belt drives a sleeve that is connected directly to the first member of a speed variator, of which the drill spindle is the driven member. The variation of speed is an even graduation, governed by the small lever at the top of the bracket.

The speed range of the spindle is from 900 to 2,700 and from 300 to 1,000 r.p.m. with a 1,750-r.p.m. drive. The feeds are taken off the spindle by a belt from a 3-step cone. The feed may be set to run continuously or to release upon the completion of each cycle. The machines are made with 1, 2, 3 or 4

spindles, taking drills up to ¾ in. in diameter. The table of the single-spindle machine has a working surface of 16x16 in. on an 8-in. overhang, or 24x24 in. on a 12-in. overhang and has a vertical adjustment on the column of 21 in. The rack movement is 6½ in. and the maximum

distance from the spindle end to table surface is 27½ inches.

The net weight of the single-spindle machine is 920 lb., and the floor space occupied is 22x32 inches.

— 6 —

Drilling and Boring Machine, Vertical, Heavy-Duty, Nos. 424-425

Baker Bros., Inc., Toledo, Ohio. [Vol.62,p.825.]

The machine is intended for heavy drilling and boring and is equipped with spindle-sleeve bearings, capped so that wear can be taken up, assuring alignment and rigidity of the spindle at all

times. It is built in two sizes. All operating levers are in front to minimize the work of the operator.

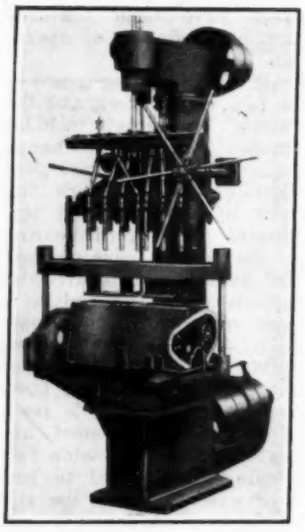
The table is of the box-knee type. The compound section is adjusted by a screw having a lead of 1 in. to the revolution. Some of the specifications of the two size Nos. 424 and 425 are: Capacity 4½ and 5½ in., distance from center of spindle to face of column 18½ and 21 in., feeds per revolution of spindle 0.005 to 0.096 in. and 0.006 to 0.108 in., speed range 32 to 272 r.p.m. and 11 to 151 r.p.m. 15 hp. is required for operating either size.

— 7 —

Drilling Machine, Multiple, Rail-Type, No. 12

Fox Machine Co., Jackson, Mich. [Vol.62,p.35.]

The drill was originally designed for use on crank cases, for six-cylinder gasoline engines. The base is of special design to allow the holding fixture with its two vertical parts to serve as guides for the bushing plate. The drill spindles are carried in a 30-in. head of the rail-type with four clusters of three spindles each. The spindles are adjustable hori-



zontally in a straight line, and vertically each is adjusted in its own bearing.

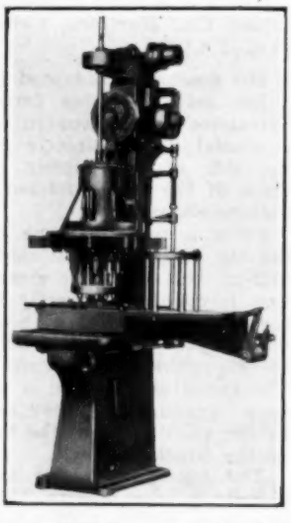
The spindle speeds are 424, 616, and 894 r.p.m. and the feeds are 0.0,025, 0.0,041, and 0.0,068 in. per revolution of the spindle. The working surface of the table is 16x21½ inches.

— 8 —

Multi-Driller, Automatic, No. 11-C.

National Automatic Tool Co., Richmond, Ind. [Vol.62, p.366.]

The No. 11-C is equipped with an automatic feed to adapt it to high production



counterbearing, countersinking and drilling operations that require a light quick-acting unit.

The feed assembly is mounted with its track-plate cam on the top of the standard line of machines and may be controlled for continuous action or for completion of one cycle only.

Belt or motor drive is furnished to specification.

— 9 —

Drill, Sensitive, Ball-Bearing, High-Speed, Adjustable-Head

Fosdick Machine Tool Co., Blue Rock and Apple Sts., Cincinnati, Ohio. [Vol.62,p. 446.]

The machine is an adaptation of the company's standard 16-in. and 18-in. multiple-spindle bases and heads to the adjustable combination illustrated. The spindles are driven by means of a splined shaft adequately supported and assembled at one end to the standard drive-pulley assembly.

The entire line of standard

bases above that for two spindles has been arranged to take the heads so the company is prepared to furnish maximum head adjustments of 24, 36, 48, 60, 72 and 84 in. depending on which one of the 3, 4, 5, 6, 7, or 8 in. spindle bases is specified.

— 10 —

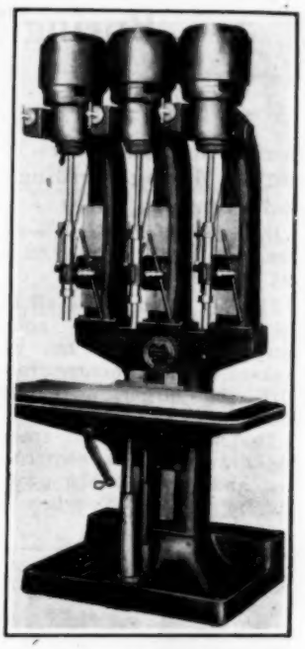
Drilling Machine, Sensitive, Ball-Bearing, Motor-Spindle

Leland-Gifford, Worcester, Mass. [Vol.62,p.366.]

A particular point of interest in the design lies in the spindle drive where a motor is mounted vertically above each drill spindle which it drives direct.

Change of motor speed is available by operating a drum controller mounted on each motor for any one of four speeds which are 600, 900, 1,200 and 1,800 revolutions per minute.

The machines are made in 14-in. and 20-in. swing, and in spindle combinations of one, two, three, four and six. Back gears can be furnished to double the number of available speeds and correspondingly increase the



power at the spindle nose. Equipment for wet drilling can also be supplied.

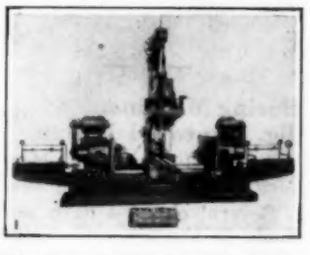
— 11 —

Drilling Machine, Multiple-Spindle, Four-Way

Fox Machine Co., Jackson, Mich. [Vol.62,p.443.]

The special-purpose drilling machine has been designed and manufactured for rapid production drilling on gasoline engine cylinder blocks. Set up as shown it drills 68 holes simultaneously in four sides of a six-cylinder engine block.

The two main horizontal heads are individually chain driven by motors on each head, making it possible to choose the motor size economically for the different groups of spindles. The speed of right and left-hand and auxiliary spindles is set at 800 r.p.m. while the vertical ones run at 540 r.p.m. A pressure pump actuates the feed movements using



oil as a pressure medium in the two hydraulic cylinders mounted back of the main horizontal heads, the flow of oil being controlled by a hydraulic plunger-type valve. A semi-automatic control mounted at the front secures 190 in. per min. advance and

return of the heads and 2 in. per min. drilling feed.

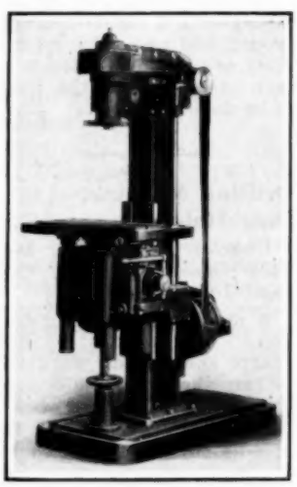
The vertical and auxiliary heads are moved by a series of inter-connecting racks and pinions arranged to equalize the feed effort and the speeds of advance, feed and return in all four directions. Independent head adjustments are also provided. Lubrication of the moving parts of the machine is provided for by the Fox system of forced feed.

— 12 —

Drill Press, Multi-Head, "Buhr," No. 2 P

Blodgett Engineering & Tool Co., 14th & Dalzelle, Detroit, Mich. [Vol.62,p. 595.]

The machine is intended for high-production multiple drilling and tapping, the main spindle and upper frame being designed to accommodate a stationary multiple spindle head, or to drive



an adapter head to which a number of work heads may be attached.

The table is cam actuated for rapid approach and retreat, and in connection with pick-off feed change gears provides feeds ranging between 0.000,5 and 0.032 in. per revolution. Continuous or one-cycle operation can be set as desired.

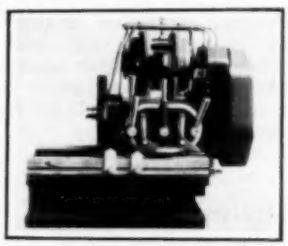
From center of spindle to face of column is 9½ in.; from spindle to base is 56 in., and from table top to spindle measures 26 in. The length of table feed is 5 in. The normal spindle speed is 450 r.p.m. but can be set up to 1,500 r.p.m. when so specified. The floor space occupied is 38x52 in., and the machine, which requires a 5 to 10-hp. motor, weighs 2,000 pounds.

— 13 —

Unit, Universal, Stickney

Rockford Drilling Machine Co., Rockford, Ill. [Vol.62, p.637.]

A universal power unit has been developed that includes hand or automatic control of all movements for single- or multiple-spindle drilling, tapping, boring, reaming and



facing operations. It consists of a head with integral square ways, fitted to slide on a horizontal base, or on a vertical column, and is intended for the universal application of auxiliary toolheads, a sub-base and a rigid, rotary, or drum-type table, either plain or automatic.

The company is prepared to furnish, to specification, fixed-center or adjustable-spindle drill heads with any number of spindles and any drilling area within the capacity of the motor. The company is also in position to design and build complete equipment that includes the jigs and tools as well as the assembled unit, ways and worktable. The motor is part of the equipment.

The unit is built in five sizes, known as Nos. 0, 1, 2, 3 and 4, which are equipped respectively with 3-, 5-, 10-, 15- and 25-hp. motors. By changing gears, any speed from half to double normal is available, normal speeds being 500, 400, 350, 300 and to specification respectively.

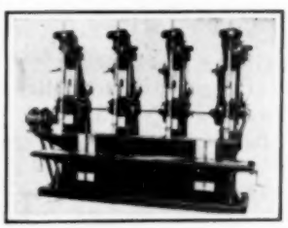
— 14 —

Drill, Gang, No. 263

Barnes Drill Co., Rockford, Ill. [Vol.62,p.711.]

By combining four of the No. 263, sliding-head, self-oiled, all-geared drills, the company has developed the gang drill illustrated.

The units may be set at



a minimum of 19 in. between centers on adjacent spindles. The maximum distance between the two outer spindle centers is 96 in., which permits of setting the units to equal maximum center distances of 24 in. The machine can be furnished with fixed spindles if desired, on this maximum equal distance, either in box or independent-column style, and the latter style in either square or round columns.

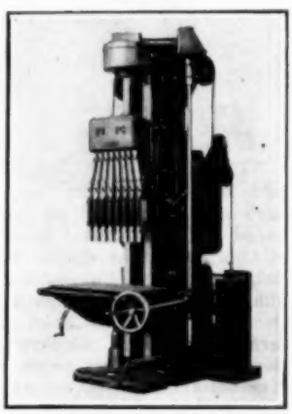
— 15 —

Drilling Machine Multiple-Spindle, No. 10

Defiance Machine Works, Defiance, Ohio. [Vol.62,p. 862.]

The spindles are provided with a straight line adjustment, making the machine suitable as a production unit for an extensive variety of multiple-spindle operations.

Eight spindles are arranged in line, fitted with



ball-thrust bearings and mounted on a head that is provided with a counterweight which can be operated either by power or hand feed. The table, regularly furnished, is of the knee type, 20x36 in., with vertical adjustment. The feed and speed mechanism is of the unit construction, lubricated by a combined forced feed, gravity flow and a splash-oiling system.

Motor-drive attachment can be provided to specification, and the holding fixtures, tools and equipment for cutting lubricant, including pump, tank and pipe, are also furnished as special equipment.

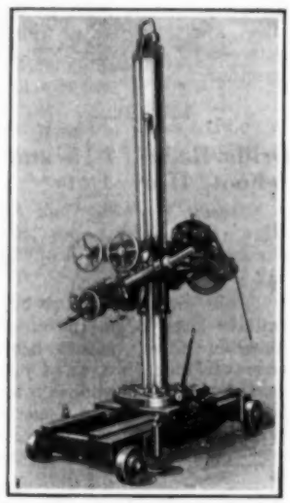
The capacity of the machine is ⅞-in. holes at a minimum center distance of 2 in., and a maximum of 22 in. The floor space occupied is 57x84 in., and the machine weighs 8,315 lb. net. A 7½-hp. motor operating at 1,150 r.p.m. is recommended.

— 16 —

Drilling Machines, Universal, Portable

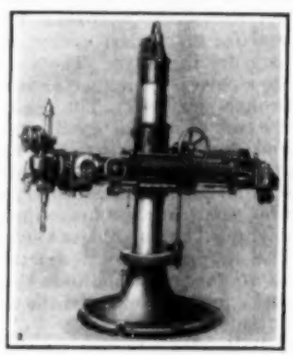
Giddings & Lewis Machine Tool Co., Fond-du-Lac, Wis. [Vol.62,p.514.]

The machine is one of two lines of universal portable drilling machines. It is known as the Boiler and Fire Box Drill and is suited to



many different kinds of drilling where it can be brought to the work and set up. It consists essentially of three main parts, the base or truck, the column and the drill-spindle unit.

The base is machined to take the column on dovetail ways. Four jacks are secured to the side frame to support the weight of the machine and to steady it for heavy-duty drilling. The column is turned and ground



to fit the drill-spindle unit. An 1,800-r.p.m. driving motor is mounted on the spindle unit and connects to the source of power through a reel that carries 30 ft. of cable. The machine is built in two sizes, the smaller having four spindle speeds and one power feed, and the larger having six speeds and two power feeds. The smaller machine weighs 4,000 lb., including the truck, or 4,500 lb.

in the event that stationary ways are specified. Corresponding weights of the larger size are 9,500 and 10,000 pounds.

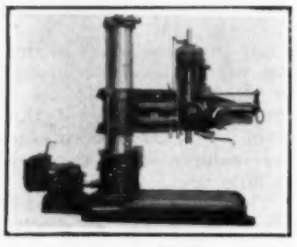
Another portable machine is an adaptation of a radial drill to a portable arrangement. It is known as the Portable Universal Radial Drilling Machine and is designed for miscellaneous drilling, boring and tapping. This machine is built in four sizes and ranges in weight between 5,000 and 30,000 pounds.

— 17 —

Drills, Radial, 4-, 5- and 6-Foot, Heavy-Duty

Fosdick Machine Tool Co., Blue Rock & Apple Sts., Cincinnati, Ohio. [Vol.62,p. 712.]

Three sizes of heavy-duty radials have been announced in which power, strength and ease of operation have been featured. The annular and thrust ball bearings used for the swing motion of the arm, the column-clamping lever



and the construction of the arm to resist torsion as well as bending are points in the design.

The spindle is of high-carbon crucible steel, takes the thrust on a special ball bearing and is driven by two long driving keys. The spindle sleeve is of a special steel bronze bushed. The gears are of a special gear steel and are heat-treated. The speed box containing gears of the 20 deg. involute type are controlled for speed changes by a single lever. The tapping reverse friction is of the multiple-disk type and can be adjusted from the outside.

Ball bearings are used in the head for the spindle and intermediate shaft bearings and for the spindle thrust in the vertical shaft and elevating screw supports, and in the feed mechanism. All other running parts are bronze bushed. Feed changes are effected with one lever. The splash system of oiling is used in the head.

The capacity of the 3-ft. machine is from $\frac{5}{8}$ to 3 in. in high-speed steel or iron, while the others are rated up to 4 inches as a maximum. Motor sizes are recommended at 5 to 7½, 7½ to 10 and 10 to 15 hp. respectively.

— 18 —

Drilling Machine, 12-in., Overhang, Sensitive

Cincinnati Hy-Speed Machine Co., 208 Lawrence St., Cincinnati, Ohio. [Vol.62,p. 446.]

The table has been redesigned in two pieces to make provision for the application of special-purpose tables at an economical cost. The column has also been made in

two pieces and the upper part moved forward as compared to the original design of this particular drill. The counterweight has been placed inside the column and the base has also been altered somewhat. Otherwise the machine is the same as originally described on page 926, Vol. 54 of the *American Machinist*.

— 19 —

Drill, Friction Drive

Leonard Bartlett, 39 Massachusetts Ave., Springfield, Mass. [Vol.62,p.600.]

The drill is being built by the F. T. Daley Machine Works for general purpose drilling and tapping.

The driving disk and shaft are mounted in a frame that can be tilted in either direction out of horizontal by means of a lever attached, and the surface of the spindle drive pulley is convex to match the movement of the disk so the point of contact will be progressively further away from the center of the disk as it is tilted in either direction.

The speed and direction of rotation can be set or altered by the position and movement of this control lever at the will of the operator. The machine can be built to specification sizes.

— 20 —

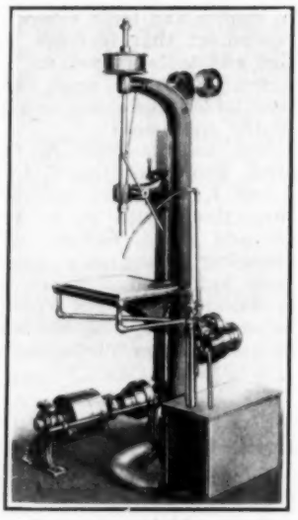
Drilling Machine, No. 5

Francis Reed Co., 43 Hammond St., Worcester, Mass. [Vol.62,p.674.]

A drilling machine of the sensitive type, designed to run at comparatively high speed and to drill holes up to ¾ in. in diameter, is shown.

The table and head are adjustable vertically, and the drilling point may be located at a height convenient to the work. The maximum distance between the table and the end of the spindle is 30 inches.

The stud upon which the lower cone runs may be ad-



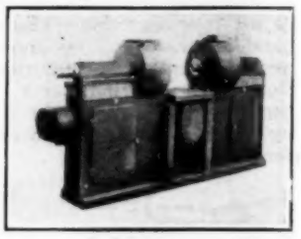
justed to regulate the tension of the belt. The piping and a geared pump are regularly furnished. The machine occupies a floor space of 2x2½ ft. and weighs 350 pounds.

— 21 —

Drilling Machine, Horizontal, Automatic, Two-Way, No. 3.

Baker Brothers, Inc., Toledo, Ohio. [Vol.62,p.34.]

The machine is made up of three main sections and is designed for single or multiple-spindle opposed operation. The center section as furnished standard, allows 8 in. between its top and the spindle, and provides 16 in. between the spindles in their



withdrawn position. It can, however, be furnished to customers' specification for sizes adaptable to particular requirements. The outer sections contain the spindles in adjustable bronze bearings, and the driving mechanism. Amply large access doors are provided.

The spindles are fitted with a No. 4 Morse taper and have special driving slots. They are fed a maximum of 6 in., and withdrawn by flat cams giving a rapid approach, proper feed and quick return. They are timed in relation to each other to suit the work to be done.

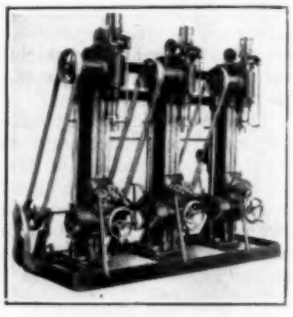
— 22 —

Drilling Machine, Deep-Hole

Charles Stecher Co., Inc., 2452 Greenview Ave., Chicago, Ill. [Vol.62,p.79.]

A machine for drilling deep holes in spindles, hollow shafts and similar work can be furnished in single or multiple units.

The work is held in the spindle by a collet chuck.



The drill is located in a turret. Any length can be drilled by moving the head after each 24 inches.

The work-spindle and all shafts run in ball bearings. Belt or motor drive can be supplied. The floor space required is 4x11 feet.

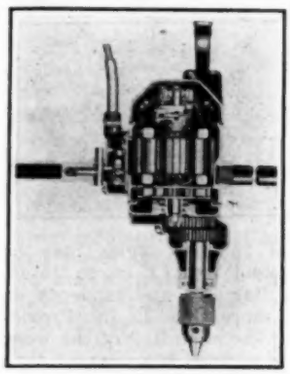
Although the machine has three spindles on a common base, it may be furnished in single units, if desired.

— 23 —

Drill, Electric, ½-Inch

Hisey-Wolf Machine Co., Cincinnati, Ohio. [Vol.62,p. 826.]

The motor of the unit is of the single-purpose type built



with a hand-wound armature and stator and is mounted on ball bearings.

The drill is supplied for either 115 or 220 volts and is equipped with a ⅜-inch Jacobs drill chuck, 10 ft. of all-rubber Tirex cable and a suitable attaching plug.

— 24 —

Drilling Machines, Duplex

National Automatic Tool Co., Richmond, Ind. [Vol.62, p.860.]

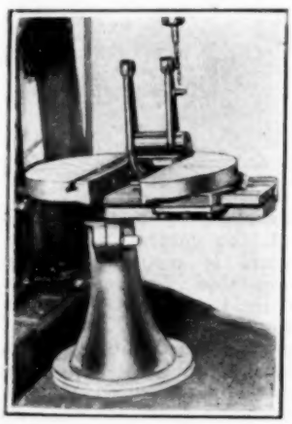
The company has purchased from the former Garvin Machine Co. its duplex, horizontal line of drilling machines, and will continue the manufacture. Repair parts for the machines now in the field can be obtained from the company's plant at Richmond.

— 25 —

Pedestal, Combination Drill Table and Vise

Modern Machine Tool Co., 601 Water St., Jackson, Mich. [Vol.62,p.219.]

The pedestal increases the



adaptability of the company's drill table and vise.

It is substantially proportioned and can be used to support the drill table from the floor or from any conveniently located position within the range of a radial drill, or other machine under which it may be placed.

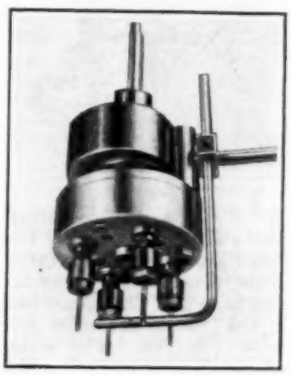
— 26 —

Tapping Head, Multiple

Errington Mechanical Laboratory, Broadway & John St, New York, N. Y. [Vol. 62,p.364.]

The head is adapted to use in connection with the standard Errington reverse-gear.

The principal feature of the adaptation lies in the fact that for close-center work the direction of rotation of the



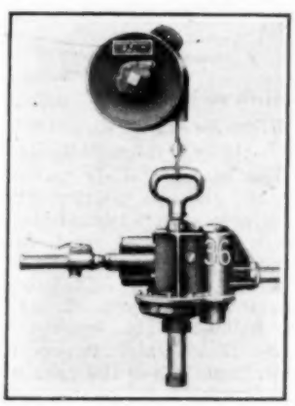
drill press spindle is made left-hand for right-hand tapping. This allows the gears and the attachment to be made larger and more serviceable for production.

— 27 —

Balancer, Pedwyn

Chicago Pneumatic Tool Co., 6 East 44th St., New York, N. Y. [Vol. 62,p.369.]

The balance is used in connection with portable electric and pneumatic tools as illustrated.



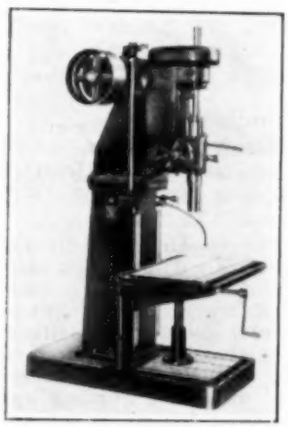
Two sizes, a No. 1, with a capacity range from 10 to 50 lb., and a No. 2, for 50 to 100 lb., are being manufactured. Adjustment is provided for to make the lifting effort correct for intermediate points. The machine can be fastened to a permanent point overhead or suspended from a trolley as desired.

— 28 —

Drive, Clutch-Pulley, for Drill No. 210

Barnes Drill Co., 830 Chestnut St., Rockford, Ill. [Vol. 62,p.520.]

The drive is mounted on top of the machine and includes the company's multiple-disk clutch which oper-



ates in connection with the automatic tapping reverse for both direct and reverse rotation.

A vertical shaft, illustrated in place, is controlled by a conveniently adjustable handlever to actuate the clutch. Provision is made by installing an automatic brake on the hub of the driving gear to stop rotation the instant the clutch is disengaged.

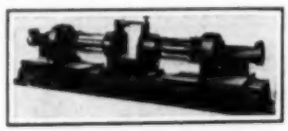
— 29 —

Boring Equipment, Transmission-Case

Hoefer Manufacturing Co., Freeport, Ill. [Vol.62,p.753.]

The unit provides for drilling, rough boring, size boring and reaming of transmission cases in one setting.

A special sub-base, as illustrated is fitted to the standard two-spindle horizontal



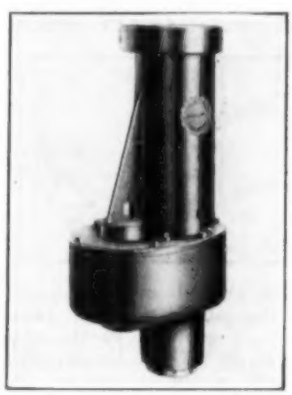
driller and carries the jig for locating the work and two auxiliary heads. The heads are geared so that proper surface speeds are maintained in proportion to the diameter of the tools being driven. The floor to floor time is stated to be five minutes.

— 30 —

Drill Speeder, Heavy-Duty

Hoefer Manufacturing Co., Freeport, Ill. [Vol.62,p.979.]

The drill speeder is intended for use on radial drilling machines to provide the proper speeds for drills smaller than can be efficiently operated otherwise. It consists of a housing that has a nose and a driver to fit the particular machine on which



it is to be used. It can be equipped with either a No. 4, 5 or 6 Morse taper shank.

Roller bearings are used on all the spindle bearings and to take end thrust. The unit is rigid in construction and is compact, measuring about 12 in. through its cross-section.

Grinding Machines

— 31 —

Grinder, Vertical, No. 39

Chas. H. Besly and Co., 118 North Clinton St., Chicago, Ill. [Vol.62,p.35.]

The machine is for wet grinding and has a motor-driven pump and an automatic starter with a start-and-stop push-button control.

The 20 hp., 575 r.p.m. motor is built into the base of the machine and has two radial and one thrust ball bearings. The bottom radial bearing and the thrust bearing run immersed in oil. The

coolant tank forms an integral part of the motor-head casting, completely surrounding the motor and having three clean-out holes in the bottom. A removable guard

ring is provided around the disk wheel, projecting above the grinding face and directing the grindings and coolant into the tank below.

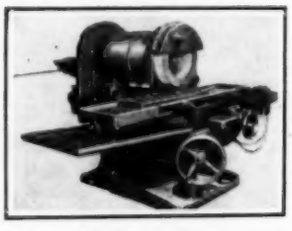
— 32 —

Grinder, Surface, "Oilgear," No. 1

Gardner Machine Co., Beloit, Wis. [Vol.62,p.38.]

A combination double-end surface and disk grinder is illustrated. One end is regularly equipped with a steel disk-wheel and universal feed table and is adapted to those jobs that may be performed upon single-end disk-grinders.

The other end contains a surface table operated by a double-acting hydraulic cylinder mounted on a compound



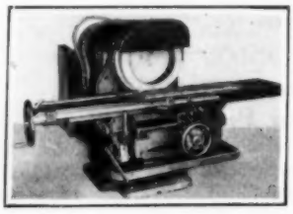
slide and directly connected to the table itself. Oil pressure is supplied to the cylinder by a variable-delivery pump mounted inside the base. All heavy bearing loads are taken on ball and roller bearings, the whole mechanism running in oil. The feed of the work to the grinding wheel is obtained through a hand - operated micrometer screw. The bottom of the machine base forms a basin for the coolant used in wet grinding.

— 33 —

Grinder, Surface, No. 8

Badger Tool Co., Beloit, Wis. [Vol.62,p.37.]

The machine which is designed for finishing flat surfaces is double-ended, carrying two 20-in. abrasive ring wheels and having a flat table at one end 73 in. long by 13 in. wide, with a finished top 32x10 in., and a longitudinal travel of 34 in., with a 5-in. in-feed. The table moves at a speed of 3 ft. per min. and can be driven either by power, reversing automatically, or by hand. The other end of the machine is equipped with a regular lever-feed work table of the



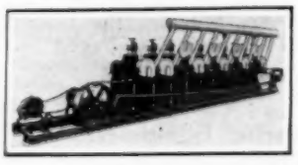
oscillating type, which can be either power- or hand-operated. The machine can be arranged for dry or wet grinding.

— 34 —

Grinding and Polishing Machine

Excelsior Tool & Machine Co., East St. Louis, Ill. [Vol. 62,p.1015.]

The machine is built for grinding and polishing a variety of articles, such as castings, forgings, stampings and sheet-metal strips of uniform thickness. They are placed on the conveyor belt and carried under the grinding and polishing wheels at an approximate speed rate of 25 ft. or more per minute. The machine consists of a series of individual units that may be arranged in 3-, 6- and 10-wheel groups. The spindles can be equipped with all-solid abrasive grinding wheels from 12 to 40 grain, or part of them can be mounted with



canvas polishing wheels. The speed of the spindles is 1,800 r.p.m. The machines are built for 5- and 8-in. width of wheels. The weights of the 3-, 6- and 10-wheel units are 11,000, 17,000 and 23,000 lb. respectively.

— 35 —

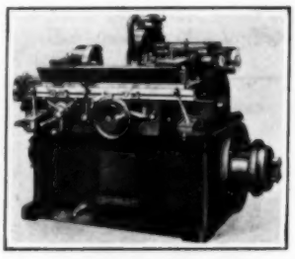
Grinder, Plain Cylindrical, Saddle-Type

Cincinnati Milling Machine Co., Cincinnati, Ohio. [Vol. 62,p.151.]

A grinding machine, in which all movements for each function are controlled by a single lever centrally located, and with a treadle that starts and stops all movements of the work and water, is built in two sizes. A front view of the machine is shown.

The weight of the bed is distributed to increase the rigidity of the whole machine. The various parts are located and mounted to eliminate avoidable vibration. The wheel head is bolted solidly to the machine bed, while the work saddle moves, carrying with it the tables and work-supporting members.

The wheel spindle is a chrome - nickel, heat - treated forging. It runs in bearings of the half-box type. Lubrication of the spindle is automatic. End thrust is taken



care of by a double-thrust, adjustable ball bearing. The change-gear box for varying the speed of the work has six changes while the gear box for the table traverse has twelve changes. The automatic crossfeed of the saddle can be either continuous or intermittent. The drive for the machine is self-contained, the various shafts and the driving mechanism being mounted in the bed. The machine swings 9 in. over the table, and takes 18 in. and 36 in. between centers. Work speeds run from 54 to 216 r.p.m. and table speeds from 50 to 192 in. per minute. The grinding wheel is 18x2-in. face, the front spindle being 7x3 in. and the rear bearing 5x2¾ in. The height of the center from the floor is 43 in., the motor is 10 hp. and the net weights are 4,680 and 4,890 pounds.

— 36 —

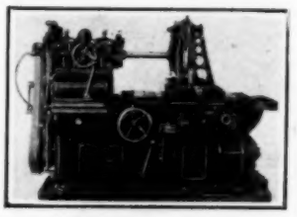
Grinder, Internal

Micro Machine Co., Bettendorf, Iowa. [Vol.62,p.77.]

The model D.G. is an internal grinder particularly adaptable for railroad-shop use. It may be used for either dry or wet grinding.

A belt - operated pump forces the coolant through the hollow spindle against a baffle plate which throws it centrifugally into the path of the wheel. A pantograph drive keeps the spindle speed constant. The spindle itself is mounted on ball bearings and driven by a 3-hp. motor located in the base.

The standard grinding range includes holes from 2½ in. up to 10 in. in diameter by 19 in. in depth. With spe-



cial spindles, holes may be ground from 1 in. to 15 in. in diameter and in depth up to more than 19 in. Providing the mounting of the work will permit, holes larger than 15 in. in diameter may be ground. Floor space required is 4 ft. 6 in. by 9 ft. The machine weighs approximately 6,000 pounds.

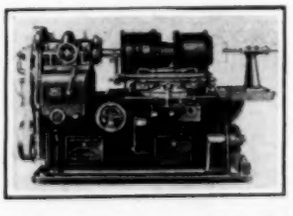
— 37 —

Grinder, Internal, Model FG

Micro Machine Co., Bettendorf, Iowa. [Vol.62,p.941.]

The grinder is intended primarily for use on air-pump cylinders so that by the aid of a swiveling fixture misalignment of the cylinders can be eliminated. By changing fixtures, it is adaptable to a wide range of locomotive- and air-brake parts such as side rods, links, crossheads and valves.

Cooling compound is forced under pressure through the main spindle onto a baffle plate, keeping the path of the grinding wheel clean. The base of the machine is of the box-type construction. The table measures 20x68 in. and has a center-rack drive, automatic travel of 30 in., and hand operation to a total of 33 in. There are five feeds



controlled by a quick-start and stop control. A swivel fixture is mounted on the main table. The headstock is of rigid construction and is provided with a range of speeds. The headstock main bearing, table and reverse-gear box are provided with automatic lubrication, all

other bearings being lubricated by a grease-gun. A diamond - dressing holder bracket is provided. The floor space required is 29x91 in., the height of the machine overall is 67 in., and the net weight is 7,650 lb., less the motor.

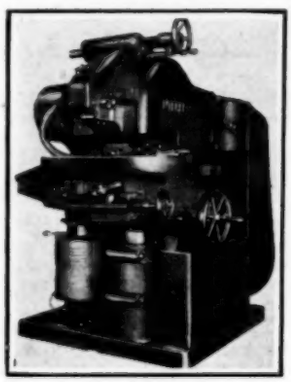
— 38 —

Grinder, Centerless, Improved Type, No. 4C

Detroit Machine Tool Co., 6523 St. Antoine St., Detroit, Mich. [Vol.62,p.479]

A number of changes and important improvements have been made in the construction and control of the company's centerless grinder and a No. 4C type has been put on the market.

The principal changes lie in the separate drive for the feed wheel resulting in a



greater range of feed speeds, in the mounting of the drive motor and generator for the feed-wheel drive in the base of the machine, in the spindle-bearing and work-guide design and in the general strengthening of all supporting members.

The feed wheel is driven by a vertical-type, d.c., variable-speed motor through a worm and wheel, the motor being mounted to swing with the feed wheel and being provided with a rheostat for 25 different speeds to give feeds ranging from 1.69 to 89.6 ft. per minute.

— 39 —

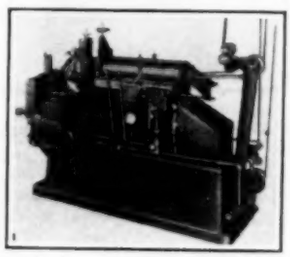
Grinder, Gear, Model B

Garrison Gear Grinder Co., Dayton, Ohio. [Vol.62,p.975.]

The model B is an improvement of the grinder originally described on p. 366, Vol. 55 of the *American Machinist*.

The machine is hydraulically controlled by means of individual motors. Its operation is automatic. The abrasive wheel used has its periphery dressed to the size and shape of a rack tooth that would mesh properly with a finished gear of a given pitch and pressure angle. By means of the hydraulically operated ram, the formed wheel is traversed back and forth between the teeth of the hardened gears mounted on the work arbor.

The wheel dresser is



mounted on the head directly over the wheel and provides an adjustable means for dressing the wheel for finishing the gears from 3 to 16 diametrical pitch of any pressure angle from 8 to 25 deg. The size of the wheel used is 10x½x3 inches.

A geared-type pump furnishes oil under pressure direct to the ram, indexing and table-traverse motors. Another pump also furnishes a generous flow of coolant to the wheel and work. The ram has a maximum travel of 6¾ in. and can be adjusted to ⅝ in. at a constant rate of travel speed of 50 ft. per minute. Approximately 2 hp. is required to operate the machine from the countershaft.

— 40 —

Drill Point, Thinner

Oliver Instrument Co., Adrian, Mich. [Vol.62,p. 293.]

The thinner is intended for use in connection with the —

drill-point grinder in order to produce a point that is correct in all particulars.

The wheel is kept true to a slanting face by means of a diamond truing device attached to the machine and is mounted on a column, in the base of which is the driving motor.

A handwheel controls the vertical travel of a knee on the upper finished portion of the column. A carriage moving horizontally is mounted on this knee directly below the grinding wheel, and it in turn carries an arm with an adjustable yoke which supports the drill-shank sleeve in a trunnion holder.

— 41 —

Grinder, Universal and Tool, "Ohio," No. 2-L

Oesterlein Machine Co., Cincinnati, Ohio. [Vol.62, p.519.]

The grinder is being marketed particularly for use in railroad and automobile shops for grinding gages, reamers,

boring bars, bridge reamers, taps and similar tools. The company has featured the design from the standpoint of rapid manipulation and wide range of application.

The machine has a capacity of 30 in. between centers, a 9-in. swing, a 7½-in. vertical travel, and is constructed for the application of attachments for cylindrical, internal and surface grinding in addition to its regular set-up for tool and cutter work.

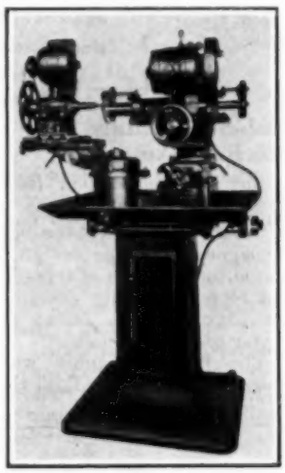
— 42 —

Grinder, Cutter and Radius, Universal, R-6

Keller Mechanical Engineering Corporation, 70 Washington St., Brooklyn, N. Y. [Vol.62,p.790.]

The machine is intended for grinding milling cutters, reamers and similar tools and is suited for spherical and radius work, cylindrical, taper, face, angular form, flute and blade, clearance and back-off, internal and surface operations. It is driven by two motors, one for the drive wheel and one for the work wheel. The spindle speed is 5,100 revolutions per minute.

The movements longitudinally, vertically and traversely are 4¾ in. each. The



work table travel is 210 deg. angular, 3½ in. radially and 1¾ in. cross-slide. The table measures 6¾x8½ in. and is provided with three ½-in. T-slots. The overall height of the machine is 60 in., the floor space required is 44x40 in. and the net weight is 800 pounds.

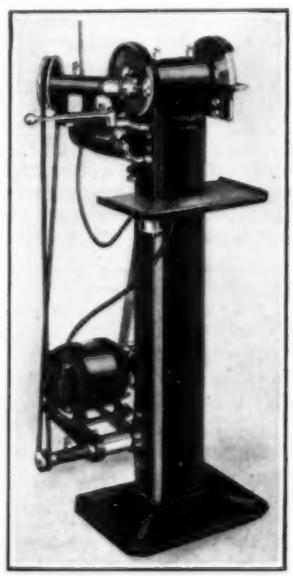
— 43 —

Grinder for Garage Use

John S. Imlach, Ottawa, Canada. [Vol.62,p.827.]

The machine is intended for grinding valves, chisels, drills, scrapers and for general-purpose work in the garage.

A motor drive attached to the base permits installation in any location. A vertical adjustment is provided for the



workhead so that valve-seating cutters can be resharpened. The bearings are ¾x2⅝ in. Two 6-in. grinding wheels, ½x¾ in. face are furnished. No idlers are required for the driving belt, as the motor is hinged on a bracket that rests its weight against the belt.

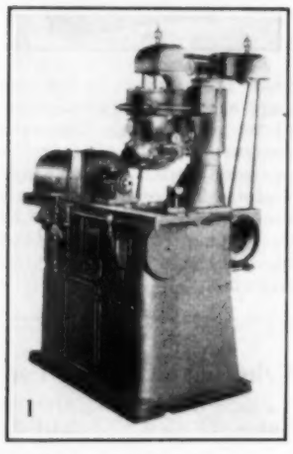
— 44 —

Hob-Sharpening Machine, Automatic

Barber-Colman Co., Rockford, Ill. [Vol.62,p.902.]

Several changes have been incorporated in the design of the automatic hob-sharpening machine previously described on page 41, Vol. 56 of the *American Machinist*.

The bed and table ways have been redesigned, so that



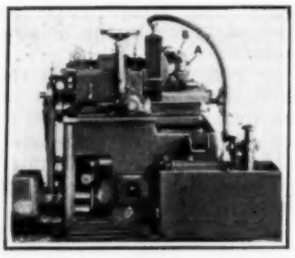
now the indexing and spiral-generating mechanisms are completely housed. Ball bearings have been added to the table-drive mechanism. The feed-handle control and the handle for setting the spiral-lead mechanism have been more conveniently located. The lost motion between the hob and the guide is provided with a spring take-up adjustment. A single-unit drive and countershaft bracket supersedes the three separate brackets heretofore used. The net weight has been slightly increased by the addition of the heavier bed and table.

— 45 —

Grinding Machine, Tappet, Automatic

Arter Grinding Machine Co., Worcester, Mass. [Vol. 62,p.671.]

The machine is an adaptation of the automatic cylindrical grinding machine described on page 709. Vol. 61. of the *American Machinist*, the wheel head being of the same construction and having the same movement. It is intended primarily for grinding the faces of valve tappets square with their stems, but by changing the holding col-



lets, may be adapted to squaring the ends of hardened bushings and similar parts.

The grinding wheel is 16x2 in. and is driven by a 5-in. belt. The wheel head is adjustable to any angle up to 20 deg. The dimensions of the machine on the floor are approximately 4x6 ft. and the net weight is approximately 12,000 lb. A 15-hp. motor is recommended.

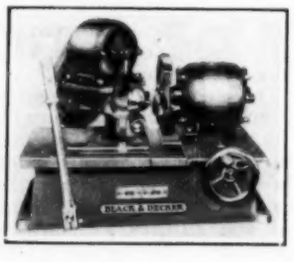
— 46 —

Refacer, Valve

Black & Decker Mfg. Co., Towson, Md. [Vol.62,p.867.]

The device is used for grinding valve faces, and permits of an angular adjustment to suit requirements. The work is held by a spring collet, three of which are furnished, 7/32, ¼ and 9/32 inches.

Two motors are used, one for the grinding wheel that is



operated at 3,450 r.p.m. and the one for the work spindle, arranged to give a speed of 430 r.p.m. through a gear-reduction drive. Each motor is controlled by a toggle switch located in the front part of the base.

— 47 —

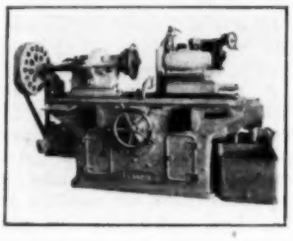
Grinding Machines, Brake-Drum

Landis Tool Co., Waynesboro, Pa. [Vol.62,p.481.]

Two special-purpose combinations of Landis grinding machines have been developed for grinding respectively the outside and inside surfaces of brake drums. The work is done on the drum after it is in place on the wheel and wheel-hub, the bore of the

latter being taken as the gaging point.

Both machines are adaptations of Landis standard equipment with special workhead holding fixtures. The heads and fixtures are independently driven by individual motors. Truing devices are provided to keep the surfaces of the wheels in accurate alignment. and a quick-



acting collet clamp holds the work in position or releases it at the will of the operator.

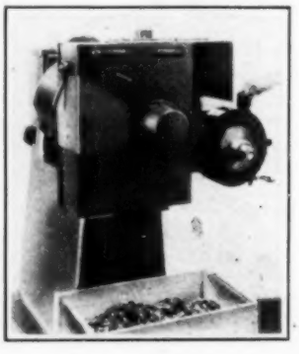
Since the work and grinding heads are independently and individually driven on both machines, and since each machine is generally arranged for one particular size and type of drum, all speed-changing mechanisms have been eliminated and constant-speed motors are used.

— 48 —

Grinding Machine, "Rotomatic"

Ransom Manufacturing Co., Oshkosh, Wis. [Vol.62,p. 906.]

The grinding machine shown is used for removing



gate burrs on small castings.

The castings are placed by hand in the revolving holder. They then pass by the wheel and drop into a box on the floor. A 5-hp. motor running at 1,200 r.p.m. carries the 18-in. diameter wheel. Various feeds can be obtained by shifting gears in the feed box. The net weight of the machine is 1,500 pounds.

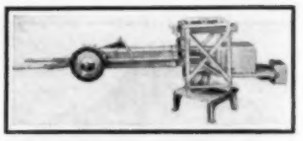
— 49 —

Grinder Portable Swing-Frame

The Farrell-Cheek Steel Foundry Co., Sandusky, Ohio. [Vol.62,p.367.]

The portable swing-frame grinder is intended primarily for use in steel foundries and billet mills.

A swivel bearing allows the frame to revolve through



a complete circle. The wheel can be moved longitudinally as well as swung up and down. It is counterbalanced by the motor and starting equipment. Push-button control is conveniently located for the operator.

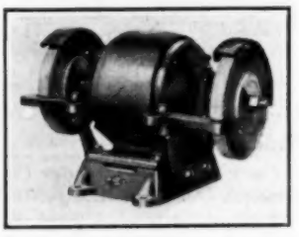
The driving motor is of the ball-bearing type and is completely inclosed, together with the starter and driving belt, to give protection from dust and grindings. Alemite lubrication is adopted throughout.

— 50 —

Grinder, Bench

Azor Motor Manufacturing Co., 7424 Bessemer Ave., Cleveland, Ohio. [Vol.62,p. 42.]

The grinder is intended for light grinding in garages, tool rooms, machine shops



etc. It has a ⅓-hp. 110-volt motor and runs at 1,800 r.p.m. on direct or alternating current as specified.

There are two 6-in. grinding wheels with a face width of ¾-in. The shaft is

threaded for a size 2-13 Jacobs chuck. The switch is inclosed in the base. It weighs 41 lb. and is 8-in. high by 13½-in. long.

— 51 —

Grinder, Constant-Peripheral-Speed

U. S. Electrical Tool Co., 2488 West 6th St., Cincinnati, Ohio. [Vol.62,p.595.]

The double-end grinding machine has been designed to maintain a constant peripheral velocity at the surface of the grinding wheel

by provision for increasing the speed of the d. c. driving motor as the wheel is worn down. The speed is governed by the position of the wheel guards.

The motor is totally inclosed, of 40-deg. rating and push-button controlled. The one-piece nickel-steel spindle is mounted on four heavy-duty SKF ball bearings.

— 52 —

Grinder, Bench, Adjustable

Coats Machine Tool Co. Inc., 110 West 40th St., New York, N. Y. [Vol.62,p.752.]

The grinder has been designed for producing a straight-grain finish on small metal parts and castings of iron, steel, brass, gunmetal and aluminum. It may also be used for producing the finish desired on bone,

fibre and horn goods, vulcanized rubber, celluloid, wood and similiar materials.

Abrasive bands 4 in. in width and in grits from 000 to 3, as well as special belts for polishing with rouge and other fine abrasive powder, are available from stock.

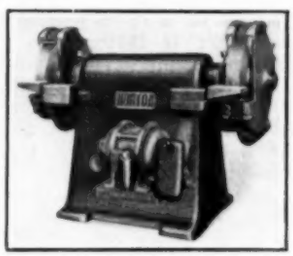
The speed of the direct-connected motor, which is furnished in 110 or 220 a. c. or d. c. current, is varied between 500 and 1,200 r.p.m. to suit the work in hand. The machine weighs 110 lb. complete with motor.

— 53 —

Grinding-Wheel Stand, Motor-Driven, Type "S"

Norton Company, Worcester, Mass. [Vol.62,p.716.]

The feature of the machine, which is designed for heavy-duty work, is the built-in motor mounted in the lower portion of the base on a pivoted platform. The correct surface speeds for large and small wheels are



provided for by means of two pulleys fastened on the spindle.

The machine is made in 16-in., 20-in. and 24-in. sizes, constructed with a large bearing area on the floor, and sufficient strength and power to meet the usual working conditions.

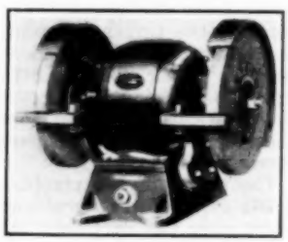
— 54 —

Bench Grinder

Azor Motor Manufacturing Co., 7424 Bessemer Ave., Cleveland, Ohio. [Vol.62,p.906.]

The machine comprises several changes from the original model in its design.

The motor has been increased in size, the guards have been changed to cover



the greater portion of the rear part of the wheel, the operating switch is of the snap type. The wheels furnished are ¾ x 8 inches.

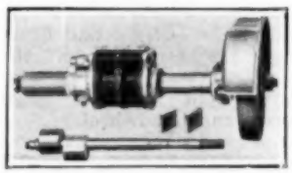
— 55 —

Grinder, Roto-Pneumatic

Warner & Swasey Co., Cleveland, Ohio. [Vol.62,p.255.]

A pneumatic grinder that operates on the rotary principle and that contains only three moving parts has been developed for grinding, wire brushing, buffing and polishing at high speeds.

There is a clearance of 0.002 in. between the chrome-



nickel steel shaft and the aluminum cylinder housing which is sealed by oil introduced from a reservoir in the handle which holds a day's supply.

Pressures can vary between 65 and 90 lb. at an air consumption from 32 to 40 ft. per minute, which does not increase even after a term of use on account of the construction. Replacement of the only wearing parts, the two micarta valve blades, can be made after removal of a cover plate, which is a minor operation.

Speeds are ranged from 3,500 to 7,000 r.p.m. Weights are 8¼ lb. on the small size and 15 lb. on the other two in the line. The three sizes mount respectively 6 x 1 and 8 x 1 grinding wheels and an 8 x 3 aluminum buffing wheel.

— 56 —

Grinding Machine, Portable, Type CB-6

R. G. Haskins Co., 516 West Monroe St., Chicago, Ill. [Vol.62,p.828.]

Intended for general-purpose work the motor is pro-

vided with a swivel base. The unit is mounted on casters for transporting. The speed of the motor is 1,750 r.p.m. The driving shaft is ½ in. in diameter, made of wound wire, and is 6 ft. in length. Buffing wheels, grinding wheels and sanding drums can be used.

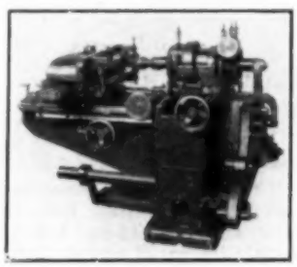
— 57 —

Attachment, Arc-Grinding, Internal Grinder

Gisholt Machine Co., Madison, Wis. [Vol.62,p.78.]

The attachment is mounted on the grinder worktable and is particularly adapted for grinding links and link blocks and in general for radius grinding work.

The grinding-wheel spindle remains stationary so that the combination movement of the cross-slide and the cradle will produce a circular arc tangent to the grinding wheel. The angular adjustment of the rail for a de-



sired radius is obtained from a chart mounted on the attachment.

The cross-slide is driven by power from the regular table-feed screw, which is provided with a clutch for disconnecting the power feed of the work table.

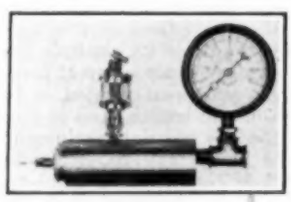
The attachment weighs approximately 500 pounds.

— 58 —

Grinding Spindle, High-Speed

Ex-Cell-O Tool & Manufacturing Co., 1469 East Grand Blvd., Detroit, Mich. [Vol.62,p.753.]

An air - turbine - driven grinding spindle that operates at extremely high speeds is being built in two sizes,



the smaller of which is illustrated. It is intended for application on hobs, taps, threads and worms, and for hole grinding.

With an applied air pressure of between 80 and 90 lb., the smaller size rotates normally at 65,000 r.p.m., while the larger is rated at 35,000 revolutions per minute. The two models include a range for grinding up to ½ in. diameters.

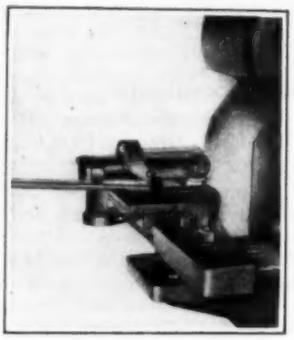
An extra-heavy-duty type of belt-driven spindle having a shaft diameter of 1⅝ in. has also been added to the company's line.

— 59 —

Truing Device, Abrasive-Wheel

The Ransom Mfg. Co., Oshkosh, Wis. [Vol.62,p.944.]

The device is suitable for wheels up to 4 in. in width. It is clamped to the toolrest



of the machine and hand-operated by a lever so the cutters traverse across the face to be trued. Ball bearings are provided for the shaft to carry the cutters. Adjustment is made by a screw and handwheel.

Lathes

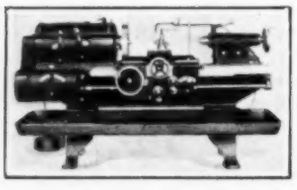
— 60 —

Lathe, Ball-Bearing, Helical-Geared

Monarch Machine Tool Co., Sidney, Ohio. Vol.62,p.673.]

The four-speed manufacturing lathe is being built in four sizes, a 16-in. heavy-duty, illustrated and a 20-in. standard.

The headstock is designed for interchangeable application to the four sizes and contains all helical gears which are made from chrome-nickel steel forgings and heat-treated. The gears and shafts run in oil. The feed box containing quick-change, hardened-steel gears is



mounted just below the headstock and provides lever-controlled combinations for four feed changes. The apron is cast in a single-piece box section and is designed to afford double support to all of its shafts. The gears are made of steel forgings and heat-treated. An automatic length stop is furnished as regular equipment. The drive may be either by belt or chain. A 7½ to 10-hp. motor is required for the machine illustrated, which swings 18 in. over the bed and 11 in. over the carriage. A multiple disk driving clutch is controlled from either the apron or the headstock.

Regular equipment consists of dog plates, compound rest, centers, wrenches, oil pan with pump and automatic length-feed stop.

The lathe illustrated weighs 4,100 lb. in the 6-ft. size, increasing by 200 lb. for each foot of increase in length.

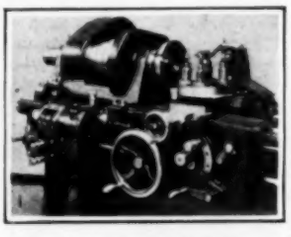
— 61 —

Lathe, Precision, Loewe

Stoehr & Sons, Inc., 200 *Fifth Ave., New York, N. Y.* [Vol.62,p.752.]

The features consist principally in the length-stop design which is said to be operative within 0.0001 in., and which includes a stop bolted to the ways of the lathe and a trip mechanism included in the design of the carriage.

The other principal feature in the design lies in the feed gear box. With a limited number of gears, a wide range of feeds can be set



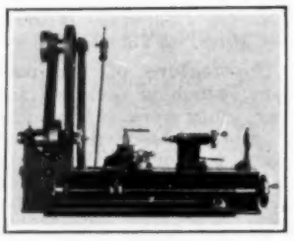
with the levers shown. The box is further arranged to allow of changing gears for unusual conditions that may arise. English and metric threads may be set for without any pick-off gear changes. A few gears carry a wide range of feeds.

— 62 —

Lathe, "Just-Rite," 10x24-In.

A. V. Carroll Machine Tool Co., Highland Ave., Norwood, Ohio. [Vol.62,p.826.]

A number of improvements have been made in the original design, including a hollow spindle, provided with a ⅝-in. hole, a set-over tailstock with self-discharging centers and a special-type swivel rest. The countershaft is



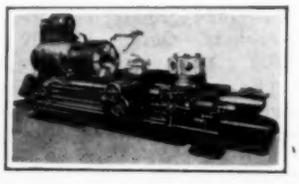
mounted on a 1¼-in. post and the motor is fastened to a built-in mount. The length of the bed is 38 in., the width 5¼ in., the maximum distance between centers is 24 in. and the net weight of the machine is 180 pounds.

— 63 —

Lathe, Turret, High-Power, "Libby," 26-In., Type C-12

International Machine Tool Co., Indianapolis, Ind. [Vol. 62,p.718.]

A single-pulley drive and an all-geared headstock are used, making the direct-drive machine an addition to the other models manufactured by the company. Power feeds are positive-gear driven and



necessary changes are made direct from the apron. The feeds of the turret and tool-post carriage are independent of each other, both as to direction and size. A forced-feed lubricating system supplies lubrication for all main bearings.

The swing of the machine is 26¼ in. over the ways and 24 in. over the carriage.

The floor space required is 114x230 in., the radial sweep of the bar is 57 in., a 35-ft. per min. rapid traverse is available. The net weight is 14,000 pounds.

— 64 —

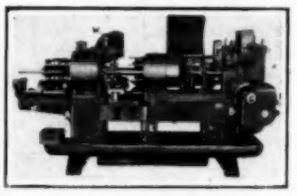
Screw Machine, Automatic, Multiple-Spindle, 1½-In.

Cleveland Automatic Machine Company, 2269 East 65th St., Cleveland, Ohio. [Vol.62,p.363.]

Centralized control, provision for chip accumulation, distribution of cooling lubricant, and lubrication of the company's four-spindle, automatic screw machine have been made features from the standpoint of operation.

A wide range of speeds and feeds has been considered advisable and therefore there are seven steps in spindle drives between 210 and 751 r.p.m. and ten steps in attendant feed changes, which latter are functions of the spindle speed through gearing from the spindle drive.

There are a number of other points of importance such as the provision for converting the threading and



auxiliary reaming spindles for service in high-speed drilling, the design to permit rapid chuck change, and the compression collars arranged on the spindles to compensate for variation in stock.

Maintenance has been taken into account in designing the spindle guards to exclude dirt and chips, in providing the removable steel collars and bronze rings in the spindle bearing construction, in arranging the provision for taking up wear in the front spindle bearings, and by including means of take-up for end motion.

The machine occupies a floor space of 42x116 inches.

— 65 —

Screw Machines

John B. Stevens, New Haven, Conn. [Vol.62,p.865.]

The line of Garvin screw machines has been taken over by John B. Stevens, whose intention it is to continue their manufacture.

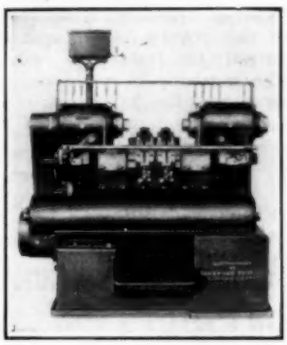
Any additions or changes that may be necessary to simplify chucking problems will be made by them. All repairs for these machines may be obtained from this concern.

— 66 —

Lathe, Bushing-Turning, Semi-Automatic Double-Spindle, Sundstrand

Rockford Tool Co., Rockford, Ill. [Vol.62,p.215.]

A high-production machine for turning straight cylindrical parts, that can be held in an expanding collet chuck, has been designed primarily for turning brass,



bronze and similar materials requiring high spindle speeds. It can, however, be adapted to other work by a minor motor change and the addition of a special countershaft between the motor and the spindles.

A 5-hp., 1,150-r.p.m., double-pulley motor, with its starting equipment, is mounted in the box type base and is belted direct to the spindle.

The machine requires 40 x 60 in. of floor space and stands 43 in. high to the spindles. It weighs 3,735 lb. net.

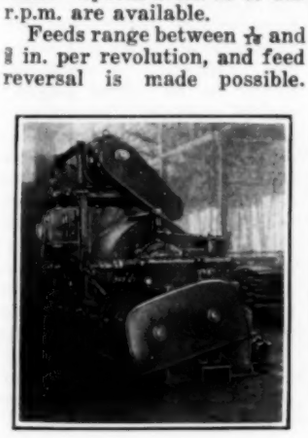
— 67 —

Turning Machine, Shafting

Brightman Brothers Co., 773 Markinson Ave., Columbus, Ohio. [Vol.62,p.556.]

The machine is driven by a constant-speed motor which is furnished as regular equipment. Speeds from 45 to 345 r.p.m. are available.

Feeds range between $\frac{1}{16}$ and $\frac{3}{4}$ in. per revolution, and feed reversal is made possible.



The automatic gripping and feeding mechanism compensates for irregularity in hot-rolled stock. Flood lubrication is supplied independently.

The toolheads for each size cover the range of machine sizes, of which there are three, $\frac{1}{2}$ to 2 in., 1 to 4 in. and 2 to 6 in. The 1- to 4-in. size is illustrated. A crane is provided for handling the head.

The machine occupies a floor space on the two larger sizes of 5 ft. and 6 in. wide by 16 ft. long by 8 ft. and 6 in. in height. It will handle lengths to a minimum of 8 feet.

— 68 —

Lathe, Crankshaft, Heavy-Duty, 48-In.

Niles-Bement-Pond Co., 111 Broadway, New York, N. Y. [Vol.62,p.716.]

The specially equipped lathe has been developed to insure greater accuracy than can be obtained by ordinary means in machining crank shafts and to reduce the setting and machining time. Both headstock and tailstock

carry auxiliary face plates, designed to assist in setting up and for accuracy in holding the work.

The design of the driver, the three-position turret toolpost, the special design of steadyrest and the plain toolpost with laterally adjustable toolslide are all arranged to handle the work to the best advantage.

When there is other work than crankshaft turning to be done, the special attachments may be removed.

— 69 —

Lathe and Grinder Combined, 113-In.

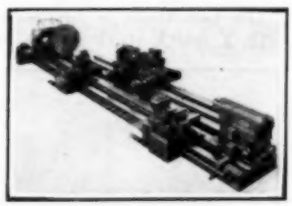
Niles-Bement-Pond Co., 111 Broadway, New York, N. Y. [Vol.62,p.859.]

The machine is the fourth of a series of lathes that has been made necessary by increase in the size of the work beyond the capacity of other available equipment for turning the mammoth electric generators which are being built in the shop of the General Electric Company.

It will swing 113 in. over the bed and 94 in. over the carriage. Its length capacity is 45 ft., and it has been designed to support a work load of 300,000 pounds.

There is a complete Landis grinder carrying a 36-in. wheel mounted on ways at the rear.

A 75-hp. adjustable-speed, d.c. motor furnishes power to drive the 22-in. diameter spindle at a speed range from $\frac{3}{4}$ to 39 r.p.m. A face plate 85 in. in diameter by 17 in. in width is centered



over the projecting spindle nose and is bolted to a flange which is forged integral with the spindle. The centers are 8 in. in diameter.

On the grinder, there is sufficient travel to grind bearings 60 in. in length at a given setting, the whole assembly being arranged so the wheel may be used in any location between the lathe centers.

The various motors which are used to individually drive the component working parts of the machine are push-button controlled and interlocked for safety.

— 70 —

Lathe, Car-Wheel, No. 4

Niles-Bement-Pond Co., 111 Broadway, New York, N. Y. [Vol.62,p.903.]

The lathe has a capacity for turning wheels from 26 to 52 in. in diameter while mounted on their axles and with either inside or outside journals.

The left-hand headstock is stationary, while the right-hand headstock is movable. Four semi-automatic drivers are used for gripping the work. The right-hand headstock is operated by a screw driven from a separate

motor. There are two four-sided flat-turret toolposts that carry the four cutting tools for roughing, flange roughing, flange and thread finishing and chamfering operations. A feed-change disk is used for the six available feeds that vary from $\frac{1}{16}$ to $\frac{3}{8}$ in. An automatic lubricating system is operated by a geared pump. The machine is driven by a 50-hp. motor mounted on the feed box. The unit system of construction has been followed.

— 71 —

Steadyrest, Mulliner

Porter-Cable Machine Co., Syracuse, N. Y. [Vol.62,p. 217.]

The steadyrest is built for application to any 12- or 14-in. toolroom lathe.

Its principal distinctive features consist in the design of the jaws and in the interchangeable jaw tips. The company is prepared to fur-

nish the interchangeable tips of any special material specified, for insertion in the work-end of the jaws.

— 72 —

Stop, Diameter, Multiple

W. L. Schellenbach, Consulting Engineer, Rawson Bldg., Cincinnati, Ohio. [Vol.62,p.331.]

The attachment is designed to set a lathe tool for a number of diameters.

A nut fastened to the carriage slide imparts end

motion to a shuttle in the housing of the attachment. This motion is limited by means of two sets of six diameter-limiting screws mounted on a shaft.

The unit can be taken from service without removing it from the carriage. The design is such that the accuracy of the tool setting is independent of any looseness in the feed screw or mechanism.

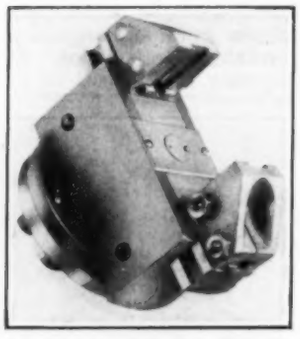
— 73 —

Chuck, Air-Operated, Steel, Two-Jaw

The Manufacturers' Equipment Co., 5704 West Fillmore St., Chicago, Ill. [Vol.62,p.407.]

The chuck is one of a line made entirely of steel. There are four sizes, 6, 8, 10 and 12 in. to hold work that is respectively 2, 4, 5½ and 7 in. in diameter.

The steel construction has made it possible to reduce the weight to approximately two-thirds of that necessary in a cast-iron chuck of equal capacity. It is also made



shorter, thus reducing the overhang by approximately 15 per cent.

The jaws are adjustable on the slides, a 1-in. movement being provided to allow for special settings. Dovetails are also provided for holding false jaws. The life of the chuck has been estimated as being greater than for one of cast-iron.

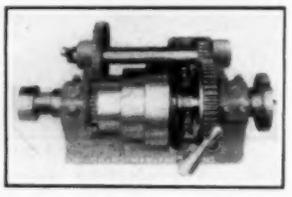
— 74 —

Lathe Head, Quick-Start and Stop

Chard Lathe Co., Newcastle, Ind. [Vol.62,p.866.]

The lathe head is intended for use on rapid production work and for toolroom use where speed is desired.

The headstock is furnished with a quick-start and stop



back gear and a three-step cone pulley that is provided with a friction clutch. The operating lever, attached to the front, is arranged with two sets of toggles that have two shifter forks which operate in a sliding cone and two brake shoes for operating the brake. The spindle has a sleeve that passes through the cone so that the cone runs free on the sleeve in place of the spindle. This construction allows the pulley to run free when the clutch is disengaged, using either open belt or back-gear drive.

Milling Machines

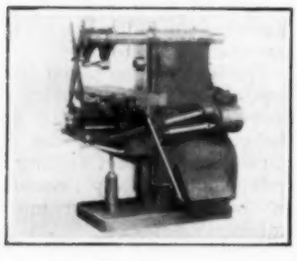
— 75 —

Milling Machine, Motor-in-Base, Milwaukee

Kearney & Trecker Corporation, Milwaukee, Wis. [Vol. 62,p.33.]

The driving motor in the line of eight sizes is mounted in the lower part of the column. It is direct geared and is placed with its pinion toward the front so the commutator and brushes can be reached by opening the hinged cover at the rear of the machine.

The motor can be lubri-



cated from outside the column while other points on the machine are automatically taken care of. Ventilation is obtained through properly placed lowers.

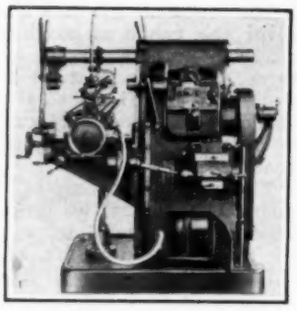
Other refinements include an improved design of friction clutch and a power rapid-traverse which latter is standard on all but numbers 2AS and 2BS. The clutch-control lever is adjustable to any angle, while the machine motions are individually controlled from convenient positions on the operating side of the machine.

— 76 —

Milling Machine, Motor-in-the-Base

Brown & Sharpe Manufacturing Co., Providence, R. I. [Vol.62,p.365.]

The motor-in-the-base miller is essentially a redesign of the column of the standard Brown & Sharpe milling machine to accommodate the driving motor in-



side. Provision for take-up on the chain drive, for convenient motor lubrication and access to the motor, for air circulation through the motor compartment, for access to the driving clutch adjustment, together with the arrangement of the cutting-lubricant compartment in the base are features of the design.

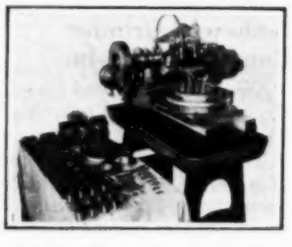
All sizes are fitted for a lubricant pump which is standard equipment on the No. 3-B plain machine. Belt drive can be furnished if desired and the motor compartment used for tool, part and cutter storage. The machines are made in two styles of three sizes each, the 1-A, 2-A and 3-A universal, and the 1-B, 2-B and 3-B plain.

— 77 —

Milling Machine, Automatic

Bilton Machine Tool Co., Bridgeport, Conn. [Vol.62, p.518.]

The machine is of the station type, is cam operated and is adaptable to the milling of a large variety of work, including screw-slotting, keyways and oil grooves, square or hexagon heads, flats or round pieces for spotting setscrews, slots



at 90 deg. or other angle simultaneously, and for other small jobs of like nature.

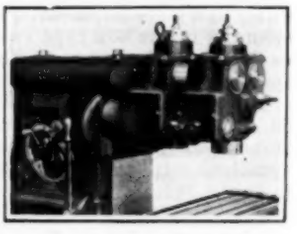
The cutter spindle, with overarm, splash guards and driving pulley, is a complete unit that derives its movement from a camshaft at the rear of the machine. The spindle has tapered adjustable bearings and is carbonized, hardened and ground. The main drive is by a double belt to a flange pulley. The cam shaft is driven by a separate belt through worm-reduction gearing. The circular work-table is mounted upon a slide on the base of the machine and has a range of movement of 5¾ in. in a direction parallel to that of the ram. Special fixtures, readily attachable to the rotary table, are required to hold the work. The machine is made in one size, weighs 2,000 lbs. and occupies a floor space of 26 x 50 inches.

— 78 —

Attachment, Milling Machine, Two-Spindle, Vertical-Head, Milwaukee

The Kearney & Trecker Corporation, Milwaukee, Wis. [Vol.62,p.367.]

There are two independent heads in the attachment which slide on and can be clamped to the double overarms. The spindles stand central between the arms.



The inner head is secured to the machine column as well as to the arms and does not move. The outer head, however, is adjustable along the overarms and its spindle can be adjusted vertically.

Possible bad effect of tool drag when large-diameter cutters are in use is met by the addition of an eccentric bushing in each head between the housing and one of the overarms, to allow the heads to be tilted slightly out of vertical. Direction of rotation of either spindle is optional, alone or in combination, by setting reverse controls provided in the attachment and on the machine. Not only may the two spindles be reversed, but in addition, it is possible to reverse the outer spindle independent of the inner spindle.

The attachment is available for all sizes in the Milwaukee line of milling machines.

— 79 —

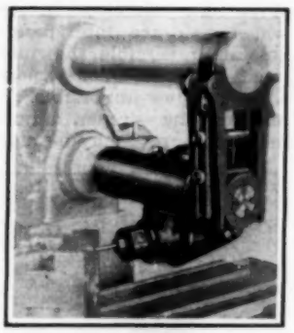
Milling Attachment, Universal, Hevy-Du-T, No. 5

Porter-Cable Machine Co., Syracuse, N. Y. [Vol.62, p.674.]

The No. 5 size is intended for taking heavier cuts than any of the other similar attachments built by the company and is recommended for irregular and intricate work requiring end mills up to 1½ in. in diameter.

It can be attached to any standard overhanging-arm milling machine by an adjustable clamp and is driven by a taper arbor of correct size to fit the machine spindle.

The drive arbor and the intermediate shaft are made



of chrome-nickel steel and run in a bath of oil on S.R.B. ball bearings and Norma Hoffman roller bearings. The gears are of the same material. The spindle is pack hardened and runs in adjustable ball bearings. The attachment weighs 45 lb. complete.

Planers and Shapers

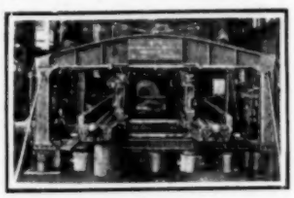
— 80 —

Plate-Planing and Upsetting Machine

Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa. [Vol.62,p.181.]

The machine has recently been installed and put in operation at the Leetsdale plant of the Riter-Conley Co. for planing and upsetting the edges of plates used in making lock-bar pipe.

It consists of two main beds, 45 ft. long, carrying the lead screws and carriages, two heavy clamping beams, 32 ft. long, and two



overhead crossbeams resting on columns, together with material-handling apparatus at the front and rear.

The two lead screws are 6 in. in diameter and are connected by bevel gears to a common drive shaft, driven through a Falk reduction-gear unit by a 200-hp. motor. Each carriage is provided with a toolholder holding six cutting tools, and a holder for eight vertical upsetting tools.

Adjustment is accomplished by means of four single-thread screws connected by bevel gears to a common drive shaft and driven by a 10-hp. motor. To guard against overtravel there is a differential limit switch, furnished by the Electric Controller & Mfg. Co. As an additional safeguard, the drive is of the slip-ring type. The speed of the carriages is from 25 to 35 ft. per minute.

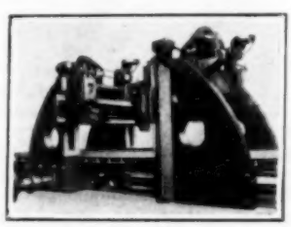
— 81 —

Planer, Double-Housing, Locomotive-Guide

Betts Machine Works of the Consolidated Machine Tool Corporation of America, Rochester, N. Y. [Vol.62,p. 218.]

The planer is intended for high-production planing on locomotive parts and similar work. Its capacity is 57 in. between housings, 31 in. under the cross-rails and 20 ft. in length between the table pockets. Increased production is obtained by the addition of a second housing to make use of the return stroke for useful cutting.

Forced and filtered lubrication is used at the essential



points. Flow of oil is induced by two independent motor-driven oil pumps.

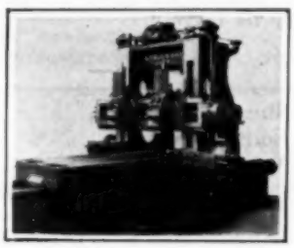
— 82 —

Planer, "Hypro"

Cincinnati Planer Co., Cincinnati, Ohio. [Vol.62,p.513.]

Points involving strength of construction, adaptability for rapid manipulation, full provision to safeguard all movements and design to produce continuous service ability have been featured.

The bed and the double-length table are of box construction and are ribbed in both directions. The housings are built with wide faces, and a box-type arch ties them together at the top. The dovetail design in the



heads is inverted from that usually employed to obtain a heavier cross-section through the center. Herringbone gears are used in the drive and all gears, including the table rack, are of steel. All movements are guarded by safety-stop levers and interlocking controls and the settings can be made from the operator's position by hand, by power feed or by rapid traverse. The continuous principle of lubrication is used, a geared pump furnishing oil in quantities to points in the base and table, while hollows of sufficient size for a ten-day supply of oil are cast in the elevating mechanism, at the ends of the rail and in each of the work heads.

The working parts are easily accessible for inspection.

The machine is built in sizes from 36-in. heavy to 72-in. standard, inclusive, and may be belt or direct drive as desired.

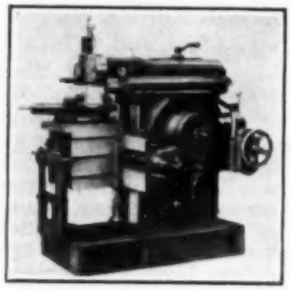
— 83 —

Shaper, Heavy-Duty, Back Geared, 16-In.

Stockbridge Machine Co., Worcester, Mass. [Vol.52,p. 219.]

The 16-in. back-geared machine, designed for heavy work in the tool room, is another size that has been added to the company's standard line. The features of construction that include the gear box drive, the automobile-type clutch and rigid base, frame and work table are the same as previously described in the *American Machinist*, Vol. 61, page 787.

An additional point in construction lies in the use of



the clutch lever to actuate a brake that locks the machine against accidental starting. A rugged vise stands 4½ in. above the table and has jaws 12 x 2½ in. with a 12-in. range of action.

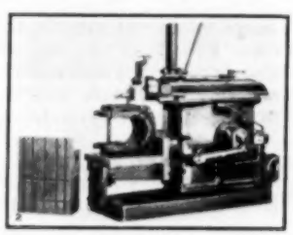
— 84 —

Shaper, Railroad

Cincinnati Shaper Co., Cincinnati, Ohio. [Vol.62,p.901.]

The 32-in. shaper is arranged for work on locomotive driving boxes, shoes, wedges, crown brasses and rod brasses. It embodies all of the features of the Climax shaper, manufactured by the company, and previously described on page 893, Vol. 59 of the *American Machinist*.

It is equipped with a special table, extended circular feeding head, special



shoe and wedge chuck, standard vise and a 1,000-lb. boom crane.

The extended body is rigid in construction and is fastened to the ram with four bolts. Its head may be rotated either by hand or automatically in the same manner as the downward feed.

The working surface of the upper table is 32 in. long by 24 in. wide, and that of the lower table is 24¾ in. long by 24 in. wide. The circular feeding head can be used for driving boxes ranging from 8 in. to 18 in. in diameter. Either a belt or a motor drive can be furnished to specifications.

Presses

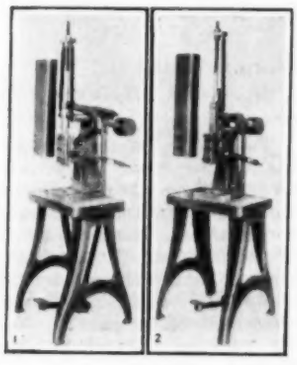
—85—

Presses, Spring, Nos. 11, 1 and 0

Taylor & Fenn Co., Hartford, Conn. [Vol.62,p.557.]

Three types of spring presses have been developed that are intended for work such as staking, rivetting, embossing, piercing, stamping and similar operations where a comparatively light uniform blow is required.

Press No. 11, which is double acting, and No. 1 which is single acting, are illustrated. No. 1 is regularly furnished with one 75-lb. spring. No. 11 is equipped with two 50-lb. springs. A No. 0 press, which



is also double acting, has one spring that is regular at 30 lb. The frame of this type is arranged for bench mounting.

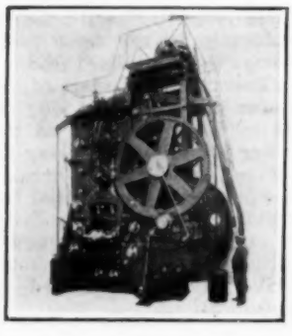
Strokes are adjustable between ½ and 2¾ in. on all three types, weights are respectively 435, 410, and 85 pounds.

—86—

Shear, Steel-Plate Billet

Henry Pels & Co., 90 West St., New York, N. Y. [Vol. 62,p.600.]

The shear is built for cold cutting 9 in. rounds and 8 in. squares or 4½x20 in. flats. The frame of the machine is



made of specially heat-treated armor plates. The 5-ton flywheel and the 9-ton main gear are of cast steel.

One 100-hp. motor is mounted on top of the frame and belted to the main drive, while another is connected by belt to operate the hold-down mechanism. A clutch controls the action of the tools. The hold-down is arranged so it automatically stops when it touches the work against which it is to hold and when it reaches the upper extreme of its travel.

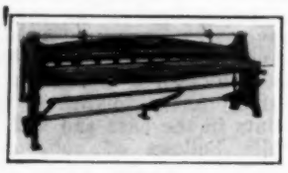
—87—

Shear, Squaring, Foot-Operated, No. 1120-F

Niagara Machine & Tool Works, 683 Northland Ave., Buffalo, N. Y. [Vol.62,p. 638.]

The shear has a capacity for cutting mild-steel sheets up to 120 in. in length and up to 18 gage in thickness.

It is equipped with a positive hold-down which is operated by two eccentrics and is guided at each end on the upper-knife bar by machined pads. A patented, parallel-screw, adjustable back-gage



can be set from either end of the machine. There are no counterweights. A treadle is set the entire length of the frame.

—88—

Presses, Blanking

Perkins Machine Co., Warren, Ohio. [Vol.62,p.904.]

The press is one of a line designed for piercing, blanking and general-purpose work on sheet metal.

It is inclinable, pivoting upon the studs by which it is attached to the leg-frame at the front and supported at the rear by a jack-screw. It is open-backed, but the sides are tied together behind the gate. The pitman is provided with a double telescopic screw. The flywheel is especially constructed from a standpoint of safety, facilities for handling and turning over the press being included. The three dog clutches in the wheel hub are interchangeable and reversible, the clutch itself being designed to make a repeat blow impossible. By making the proper adjustment, the press may be made

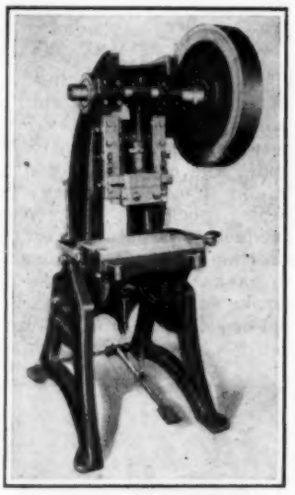
to operate continuously, to throw out at the end of each stroke, or to operate as long as the pedal is held down. The line includes nine sizes, plain and geared, ranging in weight from 380 to 15,600 pounds.

—89—

Press, Punch, Inclinable, "Verson," No. 3-OBI

La Salle Machine Works, 3015 La Salle St., Chicago, Ill. [Vol.62,p.978.]

The "Verson" punch press has been designed with a non-repeat safety clutch that has no sliding clutch pins or keys. The jawed clutch collar itself moves over a 3¼-in. squared



portion of the crankshaft directly into the hub of the flywheel. It is released by the direct action of the 1¼-in. square release arm, making only one revolution possible at a time.

The special design of press body makes it adaptable to be machined on both bed and slideways at one setting. The inclining attachment is operated with an 8-in. handwheel.

The capacity of the press is approximately 20 tons, the stroke of the slide is 2 in. and the adjustment of the slide 2½ in. The area on top of the bolster is 21x12½ in. with an oblong opening, 6x9 in., provided in the bed. The speed of the flywheel is 100 r.p.m. Its face is 4½ in. The weight of the machine is 2,200 lb. without gearing.

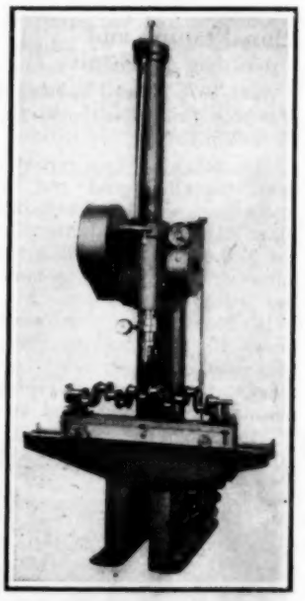
—90—

Press, Straightening, "Superflex," Twelve-Ton, No. 24

Fox Machine Co., Jackson, Mich. [Vol.62,p.80.]

The illustration shows the press with a holding fixture for finish-straightening axles for six-cylinder engines.

A pressure gage is located on the ram and an adjustable



pressure-regulating stop is also provided. The maximum capacity for axle work is 37 in. in length and a maximum swing of 10 in. The stroke of the ram is 18 in. The motor attached is of 10 hp. and makes 1,200 r.p.m. The press, together with the straightening fixture, weighs 3,000 pounds.

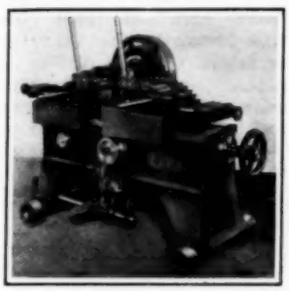
—91—

Press, Auerbach, Collar and Head

W. Edlich, Delawana, N. J. [Vol.62,p.790.]

The machine is designed for pressing collars and heads

of various shapes on spindles, axles, bolts and similar parts. The machine is provided with stop rods to prevent any movement of the work during the pressing operation, and a



safety clutch is attached that acts in case the maximum pressure is exceeded.

The machine is made in three sizes, taking maximum diameters of 37, 53 and 85 mm. The horsepower required is 2 to 3 on the smaller size, 3 to 4 on the medium and 4 to 5 on the larger size. The corresponding production is 120, 100 and 60 pieces per hour.

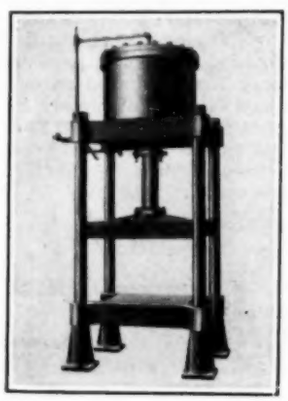
— 92 —

Press, Hydraulic, Low-Pressure

H. Edsil Barr, Erie, Pa. [Vol.62,p.599.]

A press designed for general purpose work, operating on comparatively low pressure and short stroke, is illustrated.

The cylinder is 24 in. in diameter and sufficiently long for an 8-in. maximum stroke. It operates at 200-lb. pressure. The piston and rod are integral and are made of cast iron. The upper platen



is guided with babbitted shoes to the four steel columns and is secured to the piston by a split collar fitting into a groove at the base of the piston. The base is heavily ribbed and stands 12 in. in height.

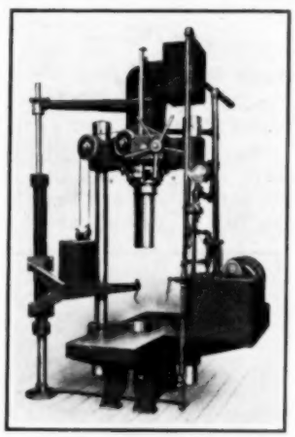
The press is rated at 45 tons capacity and measures 30 in. between upper and lower platens when the stroke is up.

— 93 —

Press, Hydraulic, General-Purpose

Hydraulic Press Manufacturing Co., Mount Gilead, Ohio. [Vol.62,p.826.]

The vertical, hydraulic press is made in several sizes and is suitable for forcing, bending and straightening operations. A hydraulic hoist operated by the pump and



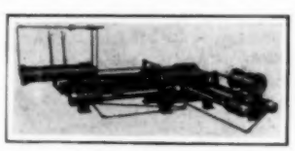
controlled by a single valve, is provided to serve the press, lifting parts up to one ton. The press is used in railroad shops for various classes of work, as well as in the malleable iron and steel foundries for straightening castings.

— 94 —

Press, Baling, Horizontal, Hydraulic

Hydraulic Press Manufacturing Co., Mount Gilead, Ohio. [Vol.62,p.867.]

The machine is designed for baling ordinary scrap metal up to ¼ in. in thickness and will produce a bale



measuring 10x10x16 in. and weighing approximately 115 pounds.

The press is arranged so it can be located on the floor or in a shallow pit, the top of the baling box being level with the floor. The side, ends and bottom are secured to each other by tie rods and dovetail joints and the cover is mounted on a slide.

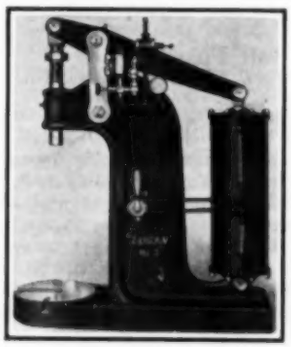
— 95 —

Press, Arbor, Air-Operated, "Logan"

Logansport Machine Co., Logansport, Ind. [Vol.62,p. 370.]

The press is intended for such work as broaching, bending, forming, forcing, pressing and riveting, as well as for the usual arbor press purposes. It is built in six sizes that range from 2,500 to 18,500 lb. at 80 lb. supply pressure.

The design includes Shelby seamless steel tubing in the cylinder, electric cast steel for the lever arm, cup-packed piston and permanent cylinder to lever construction, a pressure-reducing valve and



pressure gage and an automatic lubricator in the air line.

Hand control is standard equipment but the "Logan" foot-operated valve can be furnished to specification.

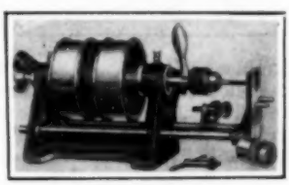
Threading Machines

— 96 —

Tapping Machine, Bench

Bench Machine Tool Co., 220 North 13th St., Philadelphia, Pa. [Vol.62,p.216.]

Two sizes of production tapping machines for bench use have been developed that can also be adapted to threading and drilling. The maxi-



mum capacity of the No. 1 machine is a No. 10 tap, while the No. 2 machine illustrated will tap a ⅜-in. thread in cast iron, or a ¼-in. thread in steel.

The spindle is regularly fitted with a Jacobs chuck and is adapted for a Greenfield "Acorn" die.

The company makes a specialty of supplying special jigs and fixtures for the machine to specification.

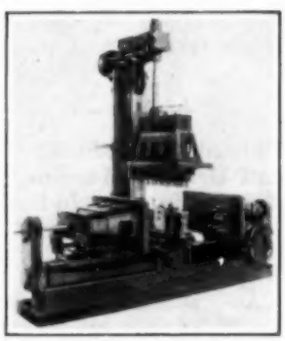
— 97 —

Tapping Machine, Multiple-Spindle, Four-Way

Fox Machine Company, Jackson, Mich. [Vol.62,p. 713.]

This special purpose machine has been built for simultaneously tapping all of the 68 holes in a six-cylinder gasoline-engine block. There are four heads in the assembly, carrying respectively 10, 23, 28 and 7 spindles, all equipped with floating tap holders and detachable tap collets.

A 15-hp. motor drives the three horizontal heads, and another 10-hp. motor is used



to drive the vertical head and the pump for circulating lubricant. The heads are arranged to be moved as a unit, but provision is made to adjust any one independent of the others. Fox standard tapping controls are used.

Feed, forward and back, which is effected through gearing, is set in motion by means of a lever conveniently located. The net weight of the machine with motor is 19,238 pounds.

— 98 —

Tapping Machine

Western Machine Tool Works, Holland, Mich. [Vol. 62,p.864.]

The company has recently purchased the Garvin line of tapping machines and will build a complete line of tapered roller bearing equipped machines.

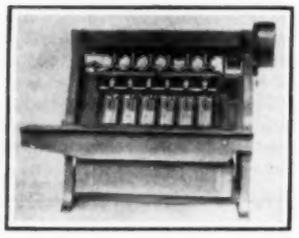
— 99 —

Bolt Threader, Tilted, No. 20

Holmes Engineering Co., Oshkosh, Wis. [Vol.62,p.41.]

Designed for bolts up to ⅝ in. in diameter and from 1 to 12 in. long, operations are automatic with the exception of loading and knocking out.

The six spindles tilt at an angle of 30 deg. to permit the use of self clamping slots and



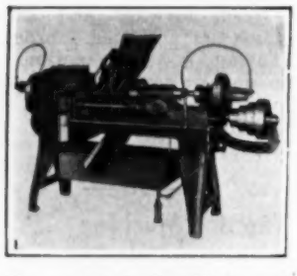
to facilitate ejection of finished bolts and washing the chips away. Synchronized cams start the bolts and close the die heads. Since they act against counterweights, imprefectly entered bolts won't break the chaser or strain a die-head. Capacity is stated to be fifty large-size bolts per min. increasing to sixty on the smaller sizes. Lubricant is forced through the hollow spindles.

— 100 —

Threading, Reaming and Drilling Machine, Automatic, Double-End

Murchey Machine & Tool Co., 952 Porter St., Detroit, Mich. [Vol.62,p.553.]

An automatic, air-controlled, machine has been developed that will perform threading, reaming, chamfering and threading operations on both ends of pipe nipples, studs, piston pins and similar parts simultaneously. It is belt connected to its source of power for driving tools, but



all material handling and feed movements are controlled by two double-acting pneumatic cylinders. One of these cylinders actuates the head and the handling device, and the other controls the chuck movement. The cylinder operating valves are cam actuated and are so arranged that air can be admitted and exhausted in varying amounts, thus regulating and cushioning the individual movements.

A maximum of 1 in. of threads can be cut on work from ⅜ to 2 in. in diameter by 3 to 9 in. long. It occupies a floor space of 22½ in. x 94 in. and weighs 2,000 lb. net. The input to drive is approximately 3 horsepower.

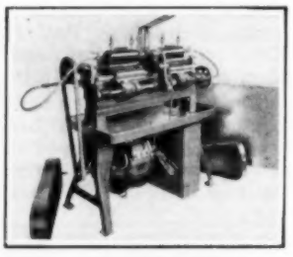
— 101 —

Threading Machine, Double-End

Grant Manufacturing & Machine Co., Bridgeport, Conn. [Vol.62,p.38.]

A development of previous models is illustrated for threading round pieces up to ⅝ in. in diameter and from 2 to 8 in. long, using standard H & G self-opening dieheads to cut the threads.

The heads are gibbed to slide on the machined upper



surface of the bed and the spindles are confined against relative lengthwise movement. The dies are held to the spindles by spring-supported floating couplings, and oil is delivered to them through the hollow spindles by means of a geared pump. Work is automatically fed from a magazine above the center of the machine. A safety device in the change gear train prevents jamming the work.

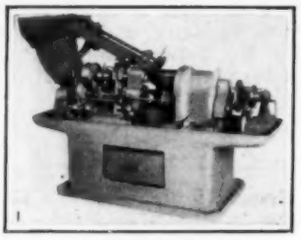
— 102 —

Bolt-Pointing and Threading Machine

Economy Engineering Co., Willoughby, Ohio. [Vol.62, p.368.]

The machine automatically points and threads bolts that range in size from ⅜x1 in. to ¾x6 inches.

The operator has only to fill the hopper located above and to the left of the machine. All operations that follow are automatic. The escapement that allows one bolt at a time to be picked up by a transfer mechanism and carried to the chuck, the



cam-actuated spring fingers which grip the shank of the bolt and deliver it to the chuck jaws, the spring feed for reducing the possibility of jamming, and the return-stroke and die-operating cams are features in the design.

Change gears are provided to get the best ratio between speeds and feeds for a given size of work, the cams are arranged so they can be replaced to suit varying lengths, and the turret head can be moved back after the clamps are loosened to accommodate the longer sizes.

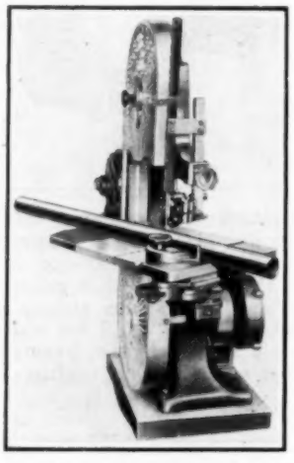
Other Machine Tools

— 103 —

Band Saw, Duplex

Racine Tool & Machine Co., Racine, Wis. [Vol.62,p.218.]

The table and integral lower saw guide and the upper saw guide have been arranged to swivel about a



common center in order to turn the blade and permit cutting long lengths of stock without interference with the upcoming side of the saw or the machine frame.

Thumb screws and hand wheels eliminate the necessity of wrenches for any adjustments.

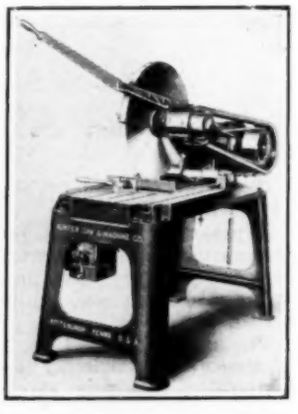
— 104 —

Saw, High-Speed, Metal Cut-Off, No. 1

Hunter Saw & Machine Co., 57th and Butler Sts., Pittsburgh, Pa. [Vol.62,p. 480.]

The machine is intended particularly for cut-off work on the smaller light-section structural and pressed shapes, metal mouldings, furniture parts, welded and seamless tubing, pipe, etc., of steel, iron, brass, copper, and other unhardened metals.

The circular saw and its 7½-hp., 1,750-r.p.m. motor are mounted above the saw table in a pivoted frame which is provided with an offset handle conveniently located to feed the saw down upon the work. A spring at the motor end of the frame returns the saw to its upper position when the operator releases the handle,



a cushioned stop limiting its upward travel.

Capacities with different shapes are as follows: pipe, 4 in.; beams, 5 in.; channels, 6 in.; angles, 4x4x½ in.; flats, 19x4 in., or 14x6 in., etc. The foregoing are based on using a saw 24 in. in diameter. Saw sizes range from 18 to 24 in., and run at peripheral speeds between 18,000 and 20,000 ft. per minute.

— 105 —

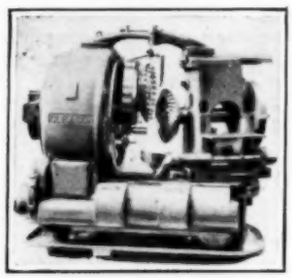
Gear Generator, Spiral, Bevel, 25-Inch

Gleason Works, Rochester, N. Y. [Vol.62,p.555.]

The generator will cut gears having a maximum cone distance of 16½ in., which includes 8 to 1 ratio gears that are 32⅜ in. in diameter, 3 to 1 ratio, 31.2 in. in diameter, and 2 to 1 ratio, 29½ in. in diameter.

A number of improvements have been incorporated in

the construction, such as the overhead, strengthening tie and the completely inclosed housing for the cutter cradle. The stop-wheel type of indexing mechanism has been adopted. End play or radial looseness can be adjusted out independently and without dismantling the spindle assembly. Lubrication is self-contained for the spindle and



built to exclude dirt from the bearings. Unit systems lubricate the cutter heads and work spindle. A geared pump supplies cutting lubricant under pressure. Change-gear trains are used for the generating-roll ratio.

Cutters 9, 12 and 18 in. in diameter can be used. A diametral pitch of 1¼ in. is rated as the maximum capacity. The machine is driven by a 7½-hp., constant-speed motor and weighs approximately 14,000 lb. net.

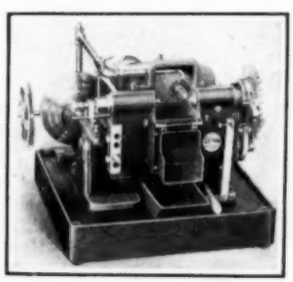
— 106 —

Pinion and Gear Cutting Machine, Automatic

Waltham Machine Works, Waltham, Mass. [Vol.62,p. 718.]

The 1¼-in. capacity machine has been added to the company's line and is especially adapted for cutting watch, meter and gage pinions and sectors.

The spindle is designed to operate at proper speed for



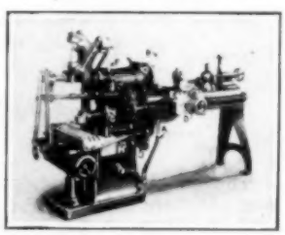
cutting brass, but has sufficient strength for steel-gear work. Helical gears drive the spindle which is carried by a swing mechanism pivoted around a shaft containing the drive pulley. A slide mounting for the cutter swing permits adjustments in a direction at right angles to the work. A worm-driven camshaft operates a lever swinging on a fulcrum attached to the base of the machine, which may be connected in four positions to give two lengths of cuts for pinions which are cut single and two for larger work. The base of the machine is 16½x16½ in., the weight is 195 lb. and the gross weight of the combined machine and countershaft is 242 pounds.

— 107 —

Machine Tool, Universal, "Four-in-One," Krause, Model U.M.

F. W. Jaeger, 140 Liberty St., New York, N. Y. [Vol. 62,p.445.]

The machine consists of four distinct tools, a lathe, a shaper, a drill press and a milling machine combined into one. The arrangement of the four units permits of working simultaneously on the lathe and any one of the other three, for while the former is complete in itself,



the drill press, shaper and milling machine make use of one work table in common.

The milling machine has a 27½x7¾-in. table with a 15⅝-in. longitudinal, a 7½-in. cross, and a 19⅝-in. vertical travel. There is a choice of 5 power feeds. The arbor is ¾ in. in diameter and has 6 available speeds.

The shaper has a maximum 7¾-in. stroke, the same maximum dimension holding for the vertical distance from the ram to the table. It can be driven at 6 speeds and has 5 choices of feed.

The drilling machine has a maximum 1-in. capacity, will drill to the center of 20½ in. and has a 4-in. spindle travel and three speed changes.

In its standard equipment is included 19 feed-change gears, and the usual accessories.

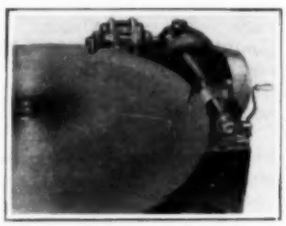
The machine occupies a floor space, with the long lathe bed, of approximately 12x3 ft. and weighs 3,190 pounds. It is particularly adaptable to portable repair stations, small machine shops, garages and shops.

— 108 —

Reconditioning Machine, Friction-Saw Blade

Joseph T. Ryerson & Son, Inc., Chicago, Ill. [Vol.62,p. 554.]

A machine designed to improve on usual methods of nicking friction-saw blades with a hammer and chisel by way of sharpening the saws



has been developed. It is illustrated at work on a saw and consists of a centering and leveling frame, a milling and serrating hob and a pair of milling cutters.

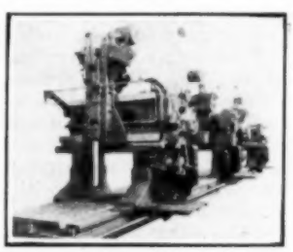
The company proposes to establish a reconditioning service at a moderate charge from each of its seven plants for saw owners whose business does not warrant investment in one of the machines.

— 109 —

Slotting Machine, Locomotive-Frame, Triple-Head

William Sellers Co., Inc., Philadelphia, Pa. [Vol.62,p. 864.]

The machine consists of a heavy bed, 60 ft. in length, that supports three slotting heads which are operated by revolving nuts on a single stationary screw supported on tumbler bearings. Each head consists of a cross-rail supported on two uprights that have a bearing on the bed. The uprights are 5 ft. apart, and the height under the cross-rail is 42 in. A



spiral-pinion planer drive actuated from a reversing motor through two pairs of gears is employed for the slotting bar. Variations in speed of the slotting bar are obtained by varying the motor speed. The ram, which is of box section, is 6 ft. long and is counterweighted and provided with a forged steel crank 5 in. wide. Each head is equipped with an electric feed mechanism for convenient adjustment and accurate timing. The operation of the feed motor is arranged through a master switch which reverses the ram by means of a limit switch. The ram is provided with a mechanical knockout at each end of the stroke that disconnects the driving gear from the ram and applies the brake. Four 9-in. frames can be slotted at one setting.

— 110 —

Machine Tool Line

Wissler Instrument Co., 613 N. Broadway, St. Louis, Mo. [Vol.62,p.905.]

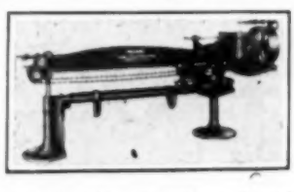
The company has purchased the line of machinery and equipment of the former St. Louis Machine Tool Co., that includes the ball- and roller-bearing polishing machines, tapping machines, tapping chucks and the Western grinding and polishing machines. The company is in position to furnish repair parts on all the equipment now in the field.

— 111 —

Groovers, Power Giant

Niagara Machine & Tool Co., 683 Northland Ave., Buffalo, N. Y. [Vol.62,p.1016.]

The line of power giant groovers has been redesigned and several new sizes have been added. They are in-



tended for grooving longitudinal seams of long cylinders. The groovers are made in four lengths, 4, 6, 8 and 10 ft., each of these being made in three sizes having a capacity of 20, 18 and 16 gage respectively. One roll is in action on the out stroke and the other on the return, the change taking place automatically.

A removable horn, for inside or outside seams of various widths, and an assortment of grooving and flattening rolls are furnished. Provision for a belt drive with tight and loose pulley is made. Individual-motor drive can be furnished.

Other Machines

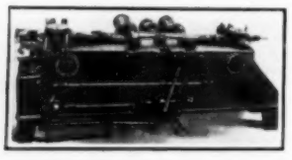
—112—

Hose-Dismantling and Assembling Machine, Type "B"

Covington Machine Co., Covington, Va. [Vol.62,p. 636.]

The original unit previously described on page 283, Vol. 55 of the *American Machinist* has been redesigned. An improved Type "B" is illustrated.

The methods of application of this type for dismantling



and assembling air, steam and signal hose and fittings, have been improved and speeded up over the preceding design by assembling the tools on two turrets and providing centralized control.

It is said that under actual test one man dismantles 240 standard air hose in an hour from floor to floor, and 200 signal hose in an equal amount of time. On assembling, 45 signal hose or 35 steam hose were found to be an hour's work.

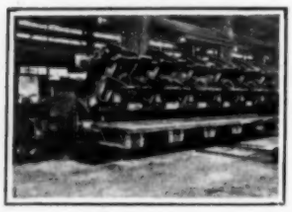
—113—

Plate-Bending Machine

Bartlett Hayward Co., Baltimore, Md. [Vol.62,p.516.]

The machine is built to make square angle bends in sheet steel ranging in thickness from 10 gage to ¾ in. and in length a maximum of 31 ft. It is used by the company in connection with fabricating its waterless gas holders.

A heavily-ribbed, box-type table is supported on feet which are integral with the



seven main cast-steel yokes spaced approximately 5 ft. apart. A quadrant is rotated through reduction gearing by a 50-hp. motor, rotation somewhat beyond 90 deg. being available. The hold-down links are made somewhat longer than the straight-line distance from their pin connections to the hold-down head so when pressure is applied to the pneumatic cylinders a toggle action is set up which greatly increases the hold-down pressure. The cylinders are mounted to pull against ribs on the yoke and to travel on them as the clamp is raised and lowered.

Plates are handled with the help of an overhead crane, and a revolving carriage operating on a track in front of the machine so that approximately 100 large size sheets can be completed per day. The motors drive through Cleveland wormgear reduction units and are provided with automatic protection and push-button control.

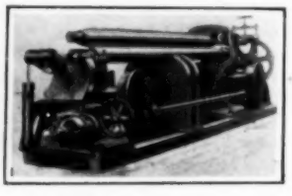
—114—

Machine, Plate-Bending

Hilles & Jones Works of the Consolidated Machine Tool Corporation of America, Rochester, N. Y. [Vol.62,p. 751.]

The plate bender is designed so that plates may be rolled true to form without the flat spot usually left on the edge of the work.

The capacity is ¾ in. with soft plates 14 ft. wide, or a corresponding duty. The upper roll is 13½ in. in diameter and is controlled by positive clutches. The horizontal



adjustment is 7¼ in. each side of center and the vertical is 4 in., these being driven by individual motors. The lower rolls are 10½ in. in diameter and have a center distance of 14½ in. and are also driven by a separate motor with an independent control.

The yoke is lowered by an air-operated cylinder, so that finished plates can be removed more rapidly than by the use of a crane. A plate-travel speed of 15 ft. per min. is possible. The weight of the machine, less the electrical equipment, is 72,000 pounds.

—115—

Bending Machine, Type F

Federal Bending Machine Co., Bayonne, N. J. [Vol.62, p.825.]

The machine is intended for bending pipe that ranges from 3 to 8 in. in diameter, making the bend without

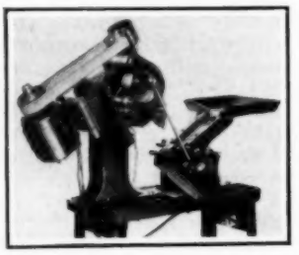
heating or filling. Two heads are adjusted to suit the radius of the bend desired and locked by set screws. The power is then applied, causing the main spindle to swivel, carrying with it a former and a revolving arm. It is necessary to reverse the motor a trifle when the bend is completed to bring the revolving arm back 10 deg., thus lessening the recoil of the pipe.

—116—

Burring Machine, Automatic

Kingsbury Manufacturing Co., Keene, N. H. [Vol.62, p.710.]

The machine is designed for countersinking the rear end of a hole to remove the



burr left by the cutting-off tool. It uses the standard Kingsbury automatic sensitive drill head mounted at a 60 deg. angle, so that the work is fed in on a 30 deg. plane.

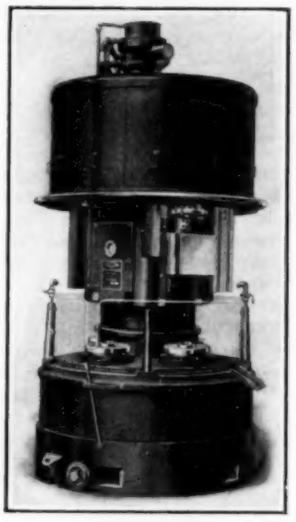
The fixture is designed so it can also be used for various drilling and tapping operations, using the chute for feeding purposes.

—117—

Mult-Au-Matic, 4-Spindle, 8-In.

Bullard Machine Tool Co., Bridgeport, Conn. [Vol.62, p.178.]

The machine is designed on the same lines as the larger 6-spindle Mult-Au-Matic, operates on the same principle and uses many of the same parts to provide one loading station and three work stations. At each work station is a universal tool-carrying head, independent as to rate of speed and direction, amount and rate of feed. A supplementary side head may be mounted at any or all of the work stations that will take horizontal, vertical or angular cuts, the amount of traverse varying from 3 to 6 in. The rates of feed and rapid traverse are in direct



relation to the main head at the same station at ratios varying from 1:1 to 1:3.

The spindle speeds range from 33 to 300 r.p.m. The spindle head is 9¾ in. in diameter and mounts a 3-jaw universal chuck. The swing in the clear is 12 in. in diameter and 6 in. in height. The main 14x4½-in. drive pulley runs at 760 r.p.m. A constant-speed, 7½-hp., 1,200-r.p.m. motor is required. The floor area required is 67 in. in diameter.

—118—

Vert-Au-Matic

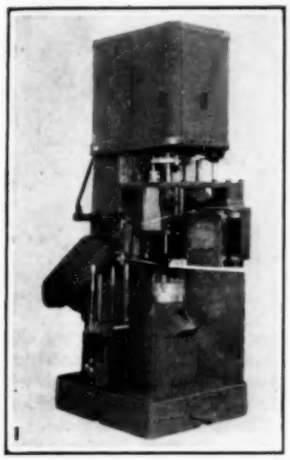
Bullard Machine Tool Co., Bridgeport, Conn. [Vol.62, p.635.]

The single-spindle, vertical, automatic chucking machine, known as the Vert-Au-Matic, is intended for production of work requiring one chucking or a series of single or group operations.

The machine is markedly similar to the four-spindle and six-spindle Mult-Au-Matic and is one unit of the Mult-Au-Matic without its coordinating control and indexing features.

The capacity of the work

in this 8-in. model includes pieces up to 6 in. in height and swinging 12 in. in diameter. The 12-in. size which is being developed will take work 6 in. high swinging 16



in. in diameter, and another 16-in. size will swing 21 in. by 6 in. high.

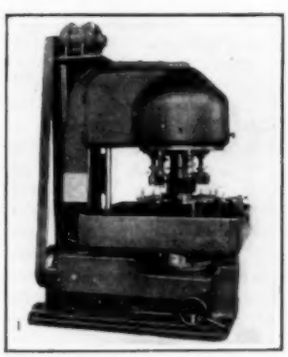
The projected floor space is 45 in. wide by 50 in. front to rear, and the machine stands 102 in. in height. An a.c. or d.c. motor of 5 hp. with a constant speed of approximately 1,200 r.p.m. is required and is mounted on a pad provided on the back of the column.

— 119 —

Automatic Machine, Vertical

Cincinnati Engineering Co., 4659 Spring Grove Ave., Cincinnati, Ohio. [Vol.62,p.714.]

A six-station machine which provides for a loading and unloading station and five progressive working positions is shown. It is especially designed for quantity production of a variety of



parts and is applicable to complete machining of valve stems, stuffing boxes, carburetor parts, faucet bodies, safety nuts, spark plugs, automotive drop forgings and in general to any piece that can be completed in the five operations and requires not more than 3½ in. of vertical travel.

All main shafts and spindles are of high-carbon alloy steel and are mounted on radial and thrust bearings. The main gears are of the same material, heat-treated, as is the main driving worm. The wormwheel is of cast iron. Flood lubrication on the mechanism in the base is supplied by a geared pump, which also feeds to the other essential points.

The machine is regularly equipped with a cutting-lubricant pump, and the machine parts are arranged to carry this lubricant to and from the work without harm to their own working surfaces. It weighs 5,750 lb. net, is 80 in. in height by 40 in. in width and 69 in. in length. A driving motor of 7½ hp., 1,200 r.p.m. is furnished by the customer or by the company when the customer so specifies.

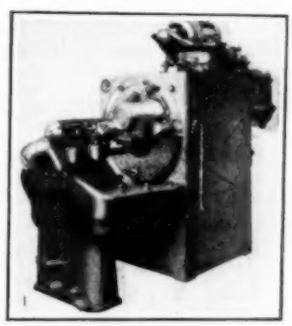
— 120 —

Chucking and Turning Machine, Unimatic

Potter & Johnston Machine Co., Pawtucket, R. I. [Vol. 62,p.717.]

The Unimatic is an addition to the company's line of automatic chucking and turning machines and is designed for continuous quantity production.

Alloy-steel gears and shafts are used throughout



in the construction of the machine, and sliding surfaces are provided with hardened-steel parts for increased wear. The end thrust of the spindle, the side thrust of the turning slide and the end thrust of the facing arm are supported by ball bearings. Lubrication is provided by means of a pump mounted on the rear side of the machine. A tank for the cutting lubricant is cast integral in the base.

Since the machine is built for quantity production, the speeds and feeds for boring, facing and turning are fixed according to the nature of the work. Speed and feed gears of the pick-off type are provided for obtaining a variety of cutting combinations.

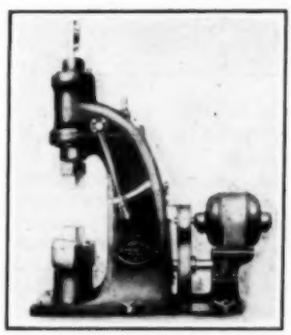
The Unimatic is built in several different models to suit requirements and can be operated either singly or in batteries. The swing of the machine is 9 in. in diameter, the turning and boring slide is 7½ in. and the facing travel of the swing arm is 4½ inches.

— 121 —

Hammer, Air, Upright

Beaudry Co., Inc., Parkway at Vine St., Everett, Mass. [Vol.62,p.180.]

The hammer which may be belt or motor driven, is made in six sizes with from 100 to 1,200-lb. frame. All sizes



are equipped with foot treadles and hand levers for ease in operation.

The anvil is separate from the main frame casting and is supported upon its own foundation in order to eliminate shocks to the hammer frame.

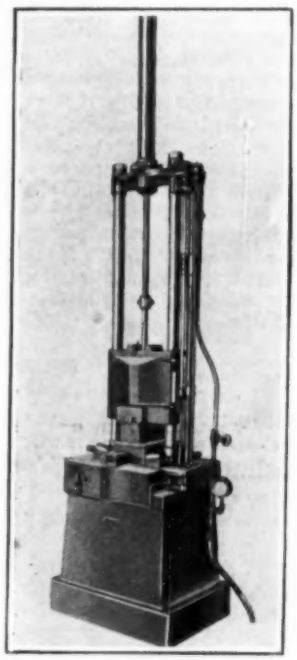
The number of blows per minute is 220 in the smallest size of hammer and 110 in the largest for work of an average size of 2½ and 8 in., respectively. The total weight varies according to the size from approximately 5,000 to 34,000 lb. The corresponding motors vary from 5 to 40 horsepower.

— 122 —

Hammer, Pneumatic, Drop

Pneumatic Gravity Hammer Co., 261 Franklin St., Boston, Mass. [Vol.62,p.179.]

The drop hammer in which the lifting device is a pneumatic cylinder mounted directly over and in line with the hammer head is on the market. The air cylinder is a brass tube, having a length equal to the full height of the drum. The movement of the hammer head is controlled by a semi-rotary



valve in the air inlet, actuated by a rod fitted with cams, or dogs, which are struck by a projection on the head to cause the rod to make a partial revolution.

The height of drop is regulated by adjusting the upper cam and a clamp collar on the piston rod.

The machine can be furnished in 100, 200, 500 or 1,000-lb. sizes. It is intended to operate upon an air pressure of 80 lb., but the cylinder may be interchanged to adapt it to any reasonable available pressure.

— 123 —

Hammer, Blacksmith

Blacker Engineering Co., Inc., Grand Central Terminal, New York, N. Y. [Vol.62, p.293.]

The machine is designed to assist the blacksmith on all

general work over the anvil.

The head and the parallel arm can be moved laterally on a lead screw to set over any portion of the anvil as desired. The anvil itself is also adjustable from or toward the machine. The hammer action is said to closely approximate that of a man-controlled sledge.

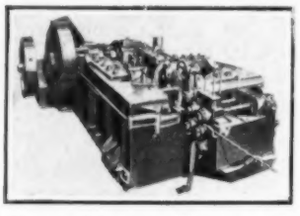
The speed and intensity of the blows struck by the hammer depend on the position to which the operator depresses the treadle. The drive requires approximately one horsepower and can be arranged to specification for either motor or line-shaft installation.

— 124 —

Heading Machine, Bolt and Rivet, Continuous-Motion

Ajax Manufacturing Co., Cleveland, Ohio. [Vol.62,p. 36.]

The header is for hot-heading rivets, carriage bolts, track bolts and machine bolts, and producing special bolts and one-blow forgings, such as automobile rim bolts, king



bolts and valve tappets. It is built for either hand or automatic feed by installation of the automatic roll to the hand-feed machine when desired.

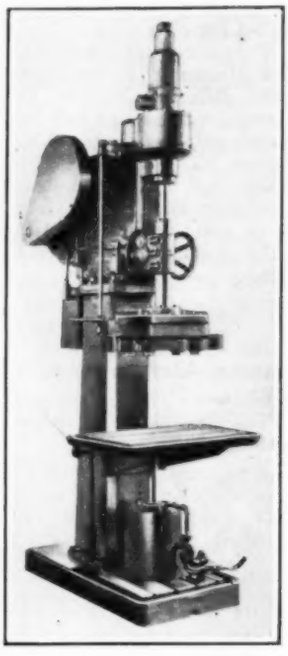
Stock, fed into the machine either by hand or by the automatic attachment, is sheared into blanks, headed and ejected by the machine itself. Water from over-head pipes is directed on the dies and heading tool to keep them cool and to carry away scale. From 7½- to 20-hp. input is required to drive machines which rate between ¾-in. and 1½-in. capacities for hand feed, and from 10 to 30 hp. is required for the same sizes if the automatic feed is used. The machine is built in four sizes, working on ¾-, 1-, 1¼- and 1½-in. material.

— 125 —

Honing Machine, No. 211

Barnes Drill Co., 830 Chestnut St., Rockford, Ill. [Vol.62,p.863.]

The machine is a modified form of the No. 210 self-oiling, all-geared, drilling and tapping machine manufactured by the company, and is intended for honing gasoline-



engine cylinders to remove from 0.001 to 0.0015 in. of material.

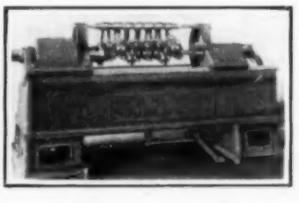
The work is mounted on the machine so that all cylinders are honed simultaneously by a honing stone attached to each spindle of the multiple head. The table is air operated and has a total movement of 10 in. A silent-chain, direct-connected motor drive is provided.

— 126 —

Lapping Machine, Crankshaft

Bethel-Player Co., Westboro, Mass. [Vol.62,p.941.]

The machine is designed for lapping crankpins and bearings of shafts for automobile engines, and has a capacity for seven bearings and six throws, the latter



having a maximum stroke of six inches. The rotative speed of the spindle is approximately 250 revolutions per minute.

The main spindle runs in parallel bronze bearings, and is given an oscillating or reciprocating motion by a bell-crank and disk which is driven from a countershaft through a silent chain. The tail spindle is double and consists of a rotating member running upon ball bearings with a non-rotating sleeve that is free to move longitudinally against the action of a coil spring. The lapping is done by two-part cast-iron laps that encircle the bearings and are held rigidly together. The material used on the lap is a special abrasive that has been developed by the company.

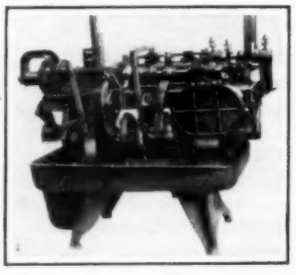
The machine occupies a floor space of 38 x 96 in. and weighs approximately 6,500 pounds.

— 127 —

Machine, Capscrew-Pointing and Shaving

Kent Machine Co., Kent, Ohio. [Vol.62,p.596.]

The automatic unit is equipped with magazine feed and is belt-driven, but can be furnished when desired with motor drive and hopper feed.



It is intended for handling up-set head bolts, capscrews and similar parts, and has a capacity range between ¼ and ⅝ in. in diameter inclusive by ¾ to 4 in. in length. The operator has only to keep the magazine supplied.

— 128 —

Grinders and Buffers

Jas. Clark, Jr. Electric Co., 520 W. Main St., Louisville, Ky. [Vol.62,p.78.]

A floor-type grinder and a bench-type buffer and grinder have been added to the company's line of electrically driven tools.

The floor-type machine, shown, has a 5-hp. inclosed motor, wound for direct or alternating current.

The height to the center of the spindle is 34 in. The distance between wheels is 36 in. for the grinder and 58 in. for the buffer. The 16 x 3-in. grinding wheels run at 1,150 r.p.m. The weight is 1,200 pounds.

The bench-type machine has a ½-hp., 4,200 r.p.m., inclosed motor for direct or alternating current. It is intended for very light grinding of small pieces and small

tools or for light polishing and buffing.

The height to the center of the spindle is 6 in. and the distance between the centers of the 5 x ½-in. wheels is 11½ in. The weight is 44 pounds. Both machines have ball-bearing spindles.

— 129 —

Polishing and Buffing Machine

P. A. Geier Co., Cleveland, Ohio. [Vol.62,p.180.]

The base is of the box-section type and contains the motor, idlers, brake mechanism and control box. The motor is of the squirrel-cage type and is mounted on a sub-base, permitting adjustment to compensate for the stretch of the belt driving the spindles.

The spindle head is of one-piece, cast-iron construction.

The 2¼-in. spindles are mounted on annular bearings and are kept dust proof by a system of dust baffles. The spindle housing is inclosed in a sheet-metal head for dust protection. Power is controlled by push buttons on the front and near the top of the machine. The electrical control is inclosed in a separate case fitting within the body of the machine.

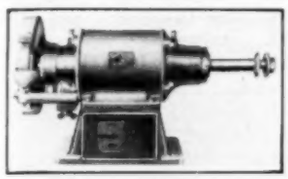
By changes in the sizes of drive pulleys, speeds varying approximately from 1,800 to 3,000 r.p.m. may be obtained independent for each end. The machine can be furnished with a 7½- or 10-hp. motor. 4-in. endless belts are used.

— 130 —

Grinder and Buffer, Combination

Hisey-Wolf Machine Co., Colerain Ave. and Marshall St., Cincinnati, Ohio. [Vol. 62,p.332.]

The machine is made in two sizes and driven by ½- and 1-hp. motors respectively. A base for floor mounting



can be furnished rather than the bench type shown if desired.

The spindle is mounted on ball bearings and carries an 8-in. diameter wheel, which is guarded in an approved manner. The starting switch provides safety against overload in starting and while running.

— 131 —

Stand, Polishing, Ball-Bearing, Heavy-Duty, No. 3

Gardner Machine Co., Beloit, Wis. [Vol.62,p.369.]

The motor and housings have been extended to support the spindle as close as possible to the point of

work-pressure application. The machine is thus made serviceable where polishing service is severe.

The inclosed-type motor is controlled with push buttons located in the front of the base. Other general points of design follow those originally laid out for the line.

— 132 —

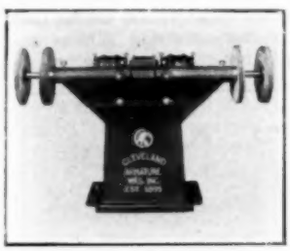
Buffers and Polishers, Heavy-Duty

Cleveland Armature Works, 4732 St. Clair Ave., Cleveland, Ohio. [Vol.62,p.517.]

The machine is made in two types, the one illustrated being a variable-speed, two-spindle machine which consists essentially of two single-end units mounted on a common base and each provided with its own driving motor, independently controlled.

The motors are furnished for either 25- or 60-cycle current and range from 2 to 6 hp. each. The spindle housings are integral with the base and support chrome-nickel spindles on Timken adjustable bearings. Speeds range from 2,300 to 3,100 r.p.m. in four steps that can be set by the operator. The machine is made in four standard sizes and weighs from 1,500 to 2,000 pounds.

The other type is built for a single, double-ended spindle and is driven by a motor



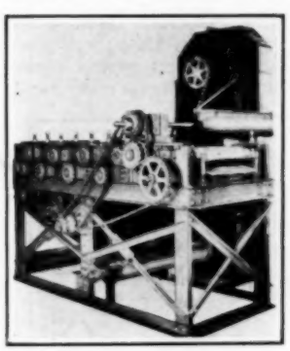
which is V-belt connected at both ends of its shaft. The V-belts are in reality chains which are leather faced and are designed to a capacity of 1 hp. per section. The machine is made in two sizes and is designed for 60- or 25-cycle current. It weighs from 1,200 to 1,500 lbs. and has speeds between 2,200 and 2,800 r.p.m. which are available in three steps as set by the operator.

— 133 —

Cleaning Machine, Strip Steel

Broden Construction Co., 1265 East 55th St., Cleveland, Ohio. [Vol.62,p.519.]

The cleaner is designed to replace the slow hand process of cleaning dirt and oil from strip steel before annealing.



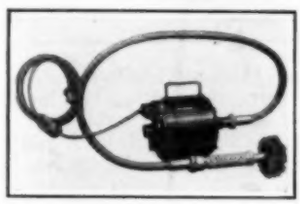
Feed rolls move the strip through the machine between a series of 6-in., cotton-faced, buffing rolls operating at different speeds to produce a polishing effect. At the same time chaff is fed down on the strip to absorb the oil. Additional clean chaff is added gradually to replace that which becomes oil soaked. A 7½-hp. motor operates the machine.

— 134 —

Motor, Flexible Shaft

C. L. P. Electric Co., 50 Vesey St., New York, N. Y. [Vol.62,p.520.]

A flexible shaft motor of the heavy-duty type; it is portable and is useful for reaching awkward corners



and confined spaces to clean, grind or buff. It is also useful in scratching, vulcanizing, sanding and for removing paint and rust.

The equipment includes the ½-hp. motor, 4 ft. of flexible shaft, 10 ft. of lamp cord with plug and switch and a scratch brush. Motors can be supplied for a.c. or d.c. current and of speeds from 1,750 to 3,500 r.p.m., according to requirements. The hand grip is fitted with Norma adjustable, open-type ball bearings to avoid possible overheating.

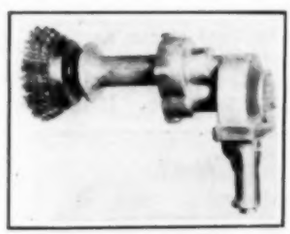
— 135 —

Air Motor, Turbine

Standard Turbine Corporation, Scio, N. Y. [Vol.62,p. 863.]

The air-turbine motor has been developed for use in connection with wire brushes for scaling chips, cleaning steel blooms in rolling mills, castings in the foundry and similar operations.

The pneumatic motor has but fifteen parts, exclusive of the screws, and operates at



a speed between 12,000 and 18,000 revolutions per minute.

The turbine shaft is mounted on ball bearings and geared by a single or double reduction to the low-speed shaft carrying the wire brush. The shaft runs in a sleeve bearing provided with a ball-thrust bearing to take the end pressure.

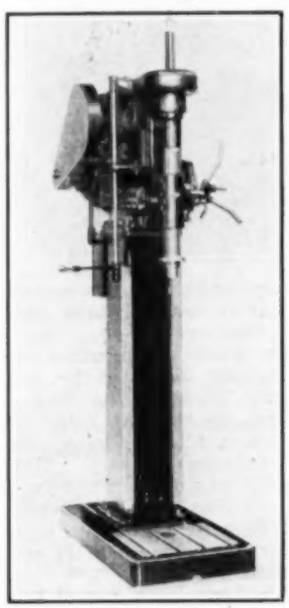
The turbine wheel is made of forged steel, tested to 100,000 r.p.m. The exhaust of the air is made through the low-speed shaft to assist in keeping the brush clean. An all-aluminum casing is used to keep the weight as low as possible and yet maintain a suitable strength. The total weight of the unit is 11 pounds.

— 136 —

Reaming Machine, Special, No. 210

Barnes Drill Co., 830 Chestnut St., Rockford, Ill. [Vol.62,p.866.]

The machine is an adaptation of the company's No. 210 self-oiling, all-geared drill and tapper, except that the column is longer and that a 5-hp., self-contained motor



drive has been added. Its principal use is in reaming gas engine cylinders. The work is mounted on the table and by using a multiple head, fastened to the spindle, all holes are reamed simultaneously.

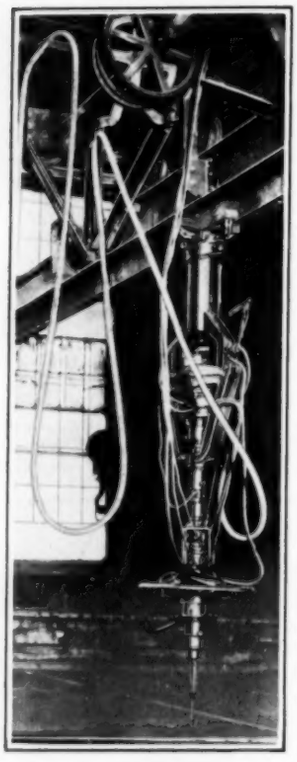
A vertical shaft, provided with a lever, controls the multiple-disk clutch drive. This shaft is further provided with a device to automatically operate a push-button control, preventing the possibility of applying the brake stop on the spindle of the machine until the current has been shut off. The floor space required is 48x34 inches.

— 137 —

Reaming Machine

American Car & Foundry Co., 165 *Broadway, New York, N. Y.* [Vol.62,p.980.]

The machine is intended primarily for use on freight- and passenger-car work, but is also adaptable for work that has punched holes in



steel parts that require reaming after assembly and before riveting.

The machine is mounted on a traveler, operated by an electric motor. The longitudinal spacing of holes is limited only by the length of the traveler runway. The electric motor used for rotating the reamer has a break-test capacity of 6.9 hp. and will ream holes up to 1⅛ in. in diameter.

A safety clutch, placed between the reamer and rotating armature-shaft extension, is released as soon as the operator's hands are moved from the handwheel and the reamer immediately stops.

It is claimed not unusual for one man to ream from 500 to 900 holes per hour.

— 138 —

Riveter, Gas-Holder Fabrication

Hanna Engineering Works, 1765 *Elston Ave., Chicago, Ill.* [Vol.62,p.369.]

The frame of the riveter is of the "truss type" allowing for a 42-in. reach with a 12-in. gap. The cylinder has a diameter of 10½ in. and at a 100-lb. air pressure is capable of exerting 30 tons on the dies. It is claimed

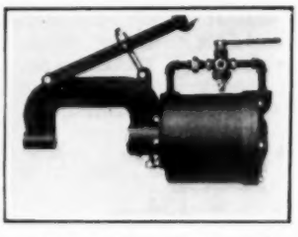
that this pressure remains uniform throughout the last half of the piston stroke, corresponding to the last half inch of the rivet-die travel.

— 139 —

Press, Straight-Acting

Hanna Engineering Works, 1765 *Elston Ave., Chicago, Ill.* [Vol.62,p.39.]

The 4-in. reach, by 6-in. gap, by 2-in. stroke pneumatic riveting press illustrated is semi-portable and is



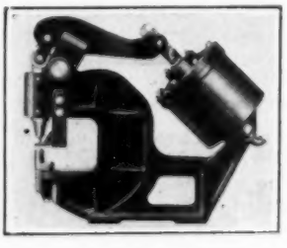
provided with a 12¼-in. cylinder that is sufficiently large to drive ⅞-in. cold or ¾-in. hot rivets with 100 lb. pressure. The net weight is 225 pounds.

— 140 —

Riveter and Punch, Combination

Hanna Engineering Works, 1765 *Elston Ave., Chicago, Ill.* [Vol.62,p.256.]

The combination machine can be used either as a stationary or a portable tool with the dies occupying various positions. It is able



to reach work in remote corners and angles.

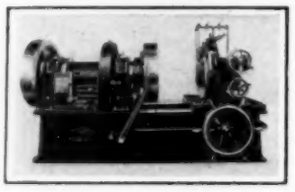
The mechanism is a combination of single lever and toggle, giving a long die-stroke and a considerable zone of uniform pressure. It is made in three sizes for rivets varying from ¾ to 1¼ in. in diameter. The machine weighs from 300 to 625 lbs., according to size.

— 141 —

Pipe Threading and Cutting Machine, 6-In.

Landis Machine Co., Waynesboro, Pa. [Vol.62, p.217]

The pipe machine has a size range from 1 to 6 in. inclusive. It can be either belt or motor-driven. When motor-driven, the motor is



mounted on the rear and requires 7½ hp. and a constant-speed of approximately 1,200 r.p.m. The power is then transmitted by a chain. The travel of the carriage is 22 in. There are eight speeds.

Two die heads are employed, the first for a range from 1 to 2 in., and the second from 2½ to 6 in. The range for each head is covered by only one set of chasers. The floor space occupied is 10x5 ft. The machine weighs 8,800 pounds.

— 142 —

Rod Cutter, No. 2

Bench Machine Tool Co., 220 North 13th St., Philadelphia, Pa. [Vol.62,p.712.]

The cutter is designed for mounting on a bench, and has capacity to cut round rods of any material from ⅜ to ⅝ in. in diameter.

The hand-operated lever actuates the special alloy-steel

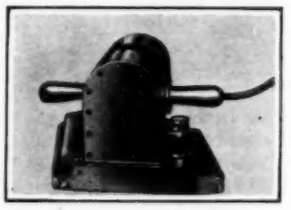
cutting tool through a cam action. A length gage is provided for setting the work.

— 143 —

Sander, Portable, Model E

R. L. Barker & Co., 642 West Washington Blvd., Chicago, Ill. [Vol.62,p.332]

The aluminum housing containing the drum and the ⅓-hp. universal motor is hinged to a base frame,



which is of the same material, and is held up by means of a screw and spring.

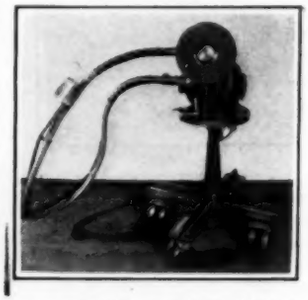
Pressure maintained on the handle above this spring keeps the drum in contact with the surface to be sanded. A special eccentric clamp permits quick changing of the 6-in. wide abrasive. The machine measures 9x10x15 in. and weighs 23 pounds.

— 144 —

Sanding Machine, Portable

Carborundum Co., Niagara Falls, N. Y. [Vol.62,p.903.]

The sander has been designed so the disk grinding head can be applied to the work from any desired position. The motor is mounted



on a cast-iron pedestal 24 in. high and is provided with a swivel. A holder on this table provides a secure resting place for the head when it is not in use. The main castings of the grinding head are of aluminum. The shafts and spindles are supported in ball bearings. Heat-treated, steel, mitre gears, running in an oil-tight chamber, provide the angular drive from the flexible shaft.

Provisions have been made for adequate lubrication of all moving parts.

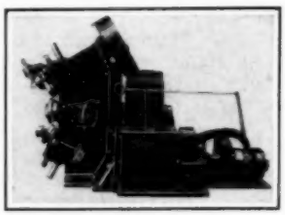
The disks are coated with Aloxite, which is manufactured by the company, and are furnished standard at 9¼ in. in diameter.

— 145 —

Shear, Double-Rotary, Bevel, No. 234

Marshalltown Manufacturing Co., Marshalltown, Iowa. [Vol.62,p.789.]

The machine is designed to combine the standard-bevel with the inverted-bevel shear. The capacity of the machine is for ¾-in. material or lighter, the depth of the



throat is 4 in. and the cutting speed is 8 ft. per minute at 285 r.p.m. The size of the cutters used are 9x2 in. on the upper and lower shears and 11x2 in. on the center.

The distance from the floor to the cutting edge of the top cutter is 36 in. and to the lower cutter is 25 in. The floor space required is 4 ft. 6 in. x 7 ft. 4 in. The net weight of the machine is 8,500 pounds.

— 146 —

Spring and Wire-Coiling Machines

Sleeper & Hartley, Inc., 335 Chandler St., Worcester, Mass. [Vol.62,p.942.]

The company has purchased the entire line of spring and wire-coiling machines manufactured by the former Garvin Machine Co. and intends to continue the manufacture, making any changes that may be necessary for improvement.

All repair parts for machines now in use may be obtained from this concern.

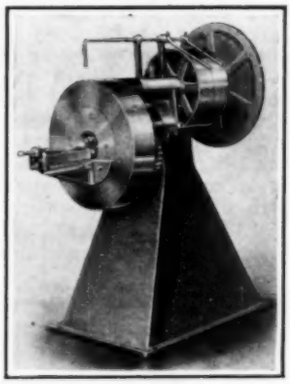
— 147 —

Swaging Machine, Rotary

Coulter & McKenzie Machine Co., 771 Water St., Bridgeport, Conn. [Vol.62, p.40.]

Almost any shape of bar stock can be swaged on the machine to a resulting rectangular section.

The dies instead of revolving are actuated by rollers carried on a rotating outer sleeve. The No. 1 machine accommodates stock up to ⅞-in., either square or round, and will produce a maximum length on a taper of 2½ in. The No. 2 takes up to ½-in. stock and will produce a taper 3½-in. long. No. 1 capacity is claimed to be 15 pieces per min. compared to 10 pieces per min. on the larger machine.



— 148 —

Swaging Machine, Four-Die, Dayton

Torrington Co., Torrington, Conn. [Vol.62,p.79.]

By substituting for the regular spindle in the standard machine a spindle having four steel-lined radial channels for the dies, and by making minor changes in the disposition of the rolls in the roller rack, the four-die machine has been developed for the market.

The spindle is applicable to the Nos. 3, 3½ and 4 standard

machines, and the amounts of reductions obtainable are from ⅝ to ¼ in., from ⅝ to ¼ in. and from 1½ to ¼ in. respectively. Tubing of approximately double these diameters can be reduced. The beveling of the dies prevents reductions to sizes which are less than ¼ inch.

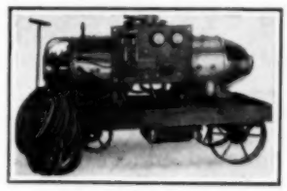
The weights are 925 lb., 1,750 lb. and 2,450 lb., and the floor spaces required are 26x27 in., 26x30 in. and 30x35 in., respectively.

— 149 —

Arc-Welding Machines, Portable

Wilson Welder & Metals Co., Inc., Wilson Bldg., Hoboken, N. J. [Vol.62,p.370.]

The unit is designed for production and repair use in foundries, steel mills, locomotive and car shops, boiler and tank shops, and similar work. It is driven by a 10-hp. motor which is furnished on specification as to current characteristics, and is mounted on a truck and wired complete at the factory. There is a range of adjustment between 75 and 250



amp. The machine uses electrodes up to ¼ in. in diameter. The ball-bearing generator is self-exciting.

Another unit is driven by a Le Roc four-cylinder, 15-hp., 1,500-r.p.m. gasoline engine. It has an adjustment range between 75 and 200 amp. and takes electrodes up to ⅛ in. in diameter.

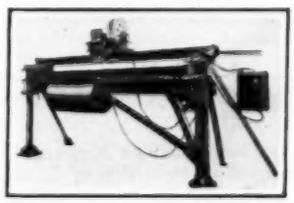
— 150 —

Equipment, Arc-Welding, Automatic

General Electric Co., Schenectady, N. Y. [Vol.62,p. 598.]

An equipment consisting of an automatic arc-welding head and a suitable work-holding fixture over which the head is arranged to move is being marketed for quantity production work on such products as tanks, boilers, cams, axle housings, pipe and various storage vessels where the static load does not exceed 10 lbs. per sq.in., and where metal thickness is at least 16 gage. It is also adaptable for building up under-cut shafts, adding metal to worn flanges on carwheels and similar repair work requiring uniform addition of metal.

The work-holding fixture, of course, must be designed



in each case especially to take care of the work in hand.

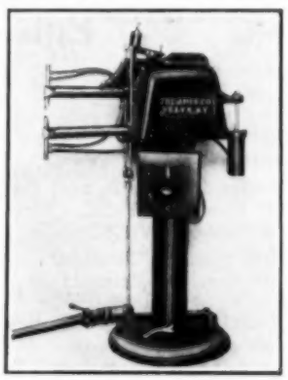
A complete equipment consists of a head and control panel, a travel carriage and a clamping device.

— 151 —

Spot-Welding Machine, No. 18

Ames Co., 302 Pearl St., Brooklyn, N. Y. [Vol.62,p. 751.]

The No. 18 is one of the improved machines manufactured by the company and is rated at 11 kva. on 220-volt, 60-cycle current. The line covers capacities to weld stock up to a combination



¼ in. in thickness, in plate form, or bars totalling 1 in. in diameter.

The foot-pedal control is arranged to make and break contact between the pieces before the electrical contacts are made or broken to prevent arcing.

— 152 —

Generator, Welding, "Alternarc"

Electric Arc Cutting & Welding Co., 152 Jelliff Ave., Newark, N. J. [Vol.62,p. 828.]

The generator will give the equivalent of 7 hp. in either alternating or direct current, as the same winding of the armature serves for both

currents. Either d.c. or a.c. leads may be short circuited at the collector ring or commutator without injury. The generator is of ball-bearing construction, provided with a take-off at both ends for driving purposes. As illustrated it is mounted on a cast-iron base for direct connected motor drive.

— 153 —

Welding Set, Engine-Driven

General Electric Co., Schenectady, N. Y. [Vol.62,p. 976.]

The engine-driven set consists of a standard WD-12 welding generator that is driven by a Buda, WTU, 4-cylinder, 4-cycle, L-head gasoline engine, which rates 22½ hp. at 1,400 revolutions per minute.

Skids are used for mounting and to facilitate moving the unit from place to place.

The unit is being marketed complete with all accessories and is intended for various uses in the shop and on construction work where electric power is not available.

Measuring, Gaging and Testing Equipment

— 154 —

Gage, Part-Inspection, Rapid

Active Machine & Tool Co., 1220 West Sixth St., Cleveland, Ohio. [Vol.62,p.555.]

The gage is intended for production inspection of parts up to 6 in. in diameter.

A dial indicator is mounted on an arm that is adjustable on a vertical column and is actuated by a small 10 to 1 ratio lever, which in turn communicates to the piece

being tested through a hardened, ground and lapped spindle which is set in the arm above the table. The dial is calibrated in ten-thousandths of an inch, which represents ¼ in. of movement of the pointer. It can be set to zero by loosening the clamp and moving the arm to an approximate position, then turning the adjusting nut to bring the reading close to zero, finally turning the dial to get exact position.

The table measures 3⅝x3½ in. Swivel attachments increase the usefulness of the tool.

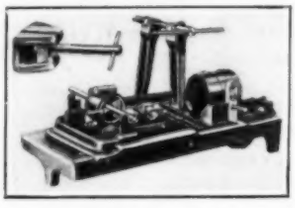
— 155 —

Aligner, Connecting Rod and Piston, Riteway

Storm Manufacturing Co., 406 Sixth Ave., South, Minneapolis, Minn. [Vol.62,p. 444.]

The aligner is intended for testing and correcting alignment errors of the connecting rod and piston assembly while it is in place in the fixture.

A holding device secures and lines the piston against the V-shoulders on the fix-



ture. An indicating pin shows the condition of alignment by comparison of its position in two directions with gaging shoulders which are carried on a frame that can be adjusted for varying lengths of rod and clamped in position. A tool to correct for twist in either direction and one for removing bends are designed to make correction without throwing any strain on the set position of the assembly. The tool is particularly adaptable to garage service, where many different designs and sizes have to be dealt with, since it will function without regard to dimension variation.

— 156 —

Gage, Cutter-Clearance, No. 900

Brown & Sharpe Manufacturing Co., Providence, R. I. [Vol.62,p.754.]

The gage is arranged for application to either hand of cutter teeth and for end mills of any style to check the clearance angle after the cutters have been reground. It will measure any cutter from ⅛ in. to 8 in. in diameter and is not limited by cutter width.

All contact surfaces are hardened and ground, and the

blades, of which two are included with each gage, are stamped at both ends with the cutter diameters to which they apply.

— 157 —

Gage, Bench, Model 35

Federal Products Corporation, 15 Elbow St., Providence, R. I. [Vol.62,p.408.]

The bench-type gage is especially designed for the use of inspectors and others whose duties involve the continuous application of the gage for long periods of time.

The dial is 2¾ in. in diameter and is graduated to 30 major divisions, indicating thousandths of an inch. Both dial and worktable are adjustable and can be clamped in any position. The worktable has an additional vertical movement within its

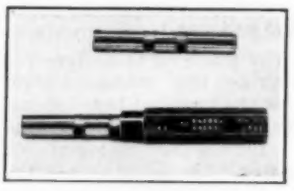
bracket. The operator can use both hands to locate the work under the indicator spindle, as he manipulates the table by pressing a pedal.

— 158 —

Gage, Plug

Van Keuren Co., 12 Copeland St., Watertown, Mass. [Vol.62,p.944.]

A "go" portion is made on either end and a "no go" in the center of the gage. One end is inserted into a handle. When the end exposed is



worn undersize, the plug is reversed. Sizes larger than ½ in. in diameter may be used without the handle. Close accuracy is obtainable.

— 159 —

Caliper, Micrometer, Screw-Thread, Zeiss

Schuchardt & Schutte, 142 Liberty St., New York, N. Y. [Vol.62,p.861.]

The screw-thread micrometer caliper is constructed so that various sized measuring points and anvils can be inserted according to requirements. The points and

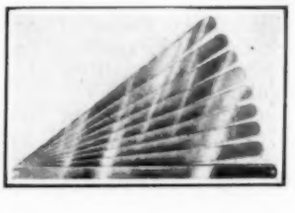
anvils are made to 60-deg. angles and cover a range of 2½ to 64 threads per inch. The micrometers are made in four sizes, from 1 to 4 in., for measuring threads within their range. They are each packed in a wooden box that has provision for a set of points and anvils.

— 160 —

Gage, Feeler, Long-Leaf

L. S. Starrett Co., Athol, Mass. [Vol.62,p.675.]

The gage has been designed with extra long leaves to meet particular uses, and



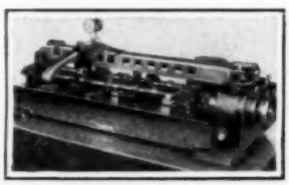
contains eight of these leaves which are respectively 0.002, 0.003, 0.004, 0.005, 0.006, 0.008, 0.010 and 0.015 in. in thickness. All are ½ in. in width by 9 in. long. They are attached to their case in such a way that they may be easily replaced if one or more become damaged.

— 161 —

Comparator, Automobile-Camshaft

Pratt & Whitney Co., Hartford, Conn. [Vol.62,p. 598.]

The device, which is for testing the accuracy of camshafts for automobile motors, consists of a rigid cast-iron base upon which are mounted a driving head containing two spindles; bearing blocks to support the regular bearings of the camshafts and a sliding comparator head provided with a suitable indicating mechanism. A motor drives a master camshaft and the camshaft to be tested in unison. If they are exactly alike in every respect, there will be no movement of the



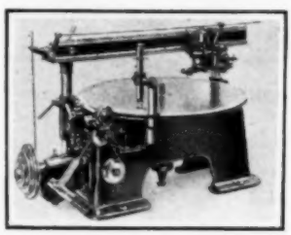
indicator pointer over the dial. If a difference exists, it may be read directly from the dial in thousandths of an inch.

— 162 —

Dividing Machine, Circular, Société Genevoise

R. Y. Ferner, Investment Bldg., Washington, D. C., [Vol.62,p.216.]

This is a bench-type machine claimed to be especially adaptable to manufacturing



purposes. The guaranteed accuracy is ± 6 seconds.

The table is 25¼ in. in diameter and has graduations ruled to sixths of a degree. There is a locating microscope for reading upon this scale. A ½-hp. motor is required to operate the machine.

The floor space occupied is 42 x 26 in., the height is 28 in., and the net weight of the machine is 365 pounds.

— 163 —

Magnifier, Stereo, Binocular

E. Leitz, Inc., 60 East 10th St., New York, N. Y. [Vol. 62,p.637.]

The magnifier is designed to assist in observing and checking precision work, and consists of a binocular prism body which can be furnished for high- or low-power magnification, a rack and pinion slider for use in attaching the instrument to a support,

and a pair of eye pieces. A variety of supports or stands are listed for application to varying machine and bench operations. A Model BSM-1 is illustrated.

The instrument produces a stereoscopic image, placing the object in plastic relief, and has a range of magnification from 3.5 to 30 diameters. It is adjustable for variation between right- and left-hand vision. Three eye-piece sets give different degrees of magnification.

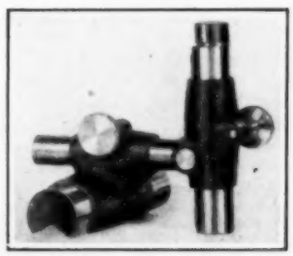
A ball-socket stage, known as BSM-Z, is furnished to specification for holding objects to be closely examined at various angles.

— 164 —

Gage, Profile, Threading-Tool, Zeiss

Schuchardt & Schutte, 142 *Liberty St., New York, N. Y.* [Vol.62,p.861.]

The threading-tool profile gage is used for inspecting the point of a threading tool and for determining its rela-



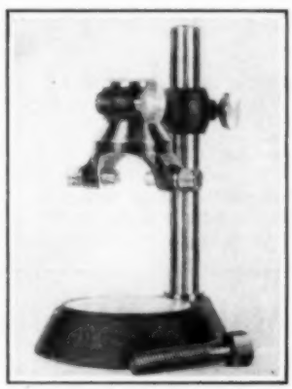
tion with the work. The instrument is made with a circular V-block so it can be applied to a piece of work that is being machined and positioned so the examining lens comes directly over the threading tool. The bottom portion of the lens has a marked glass so the tool can be set to the correct position. Adjustment of the lens can be made to suit the work. Center holes are provided in the V-block so the instrument can be supported between centers.

— 165 —

Caliper, Thread, Optical, Zeiss

Schuchardt & Schutte, 142 *Liberty St., New York, N. Y.* [Vol.62,p.861.]

The optical thread caliper, used for the inspection of pitch diameters of screws, consists of a stand, optical lens and a ball-anvil micrometer. A full set of ball



points are furnished for all threads falling within the capacity of the tool. The gage is made in two sizes, up to ½ in. and up to 1 in. in diameter. The magnifying unit can be removed from the stand and used for checking work in the lathe or grinding machine.

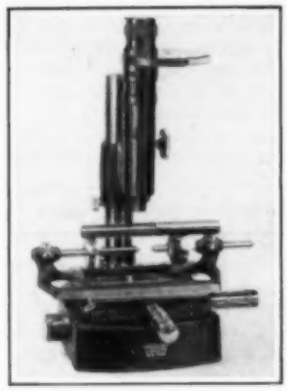
— 166 —

Microscope, Toolmaker's, Zeiss

Schuchardt & Schutte, 142 *Liberty St., New York, N. Y.* [Vol.62,p.861.]

The toolmaker's microscope is used for the inspection of threads and threading tools, graduations, formed cutters, ball impressions made by Brinell tests, cracks, flaws and surfaces of various natures.

An accurate optical templet is located at the upper portion of the magnifying lens. The work to be measured is located either by V-



blocks or on centers that are mounted on a compound table which is provided with a swivel movement. The microscope can be fitted with a camera for recording the inspection of threads and other materials.

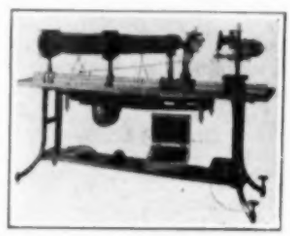
— 167 —

Micro-Metallograph, Model 1924

E. Leitz, Inc., 60 East 10th St., New York, N. Y. [Vol. 62,p.178.]

The apparatus is a combination microscope and camera and is intended for use in examining and photographing metals and other objects.

The microscope is of the inverted type and is equipped with an object stage, a vertical illuminator, an arrangement for oblique illumination, and an automatic arc lamp, or a mazda lamp having a solid strip of tungsten. A



vibration absorber is included in the mounting, and both the camera and microscope slide on a triangular track of cast iron. The camera has a bellows length of 100 cm. An attachment for photographing large specimens can be furnished with various accessories.

— 168 —

Thermopyres, Tycos

Taylor Instrument Co., Rochester, N. Y. [Vol.62,p. 41.]

For reading high temperatures; the portable instrument consists of a 39-in. thermocouple stem combined

with a millivoltmeter, having a scale-range of 2,200 deg. F. An accuracy limit of 20 deg. F. is claimed which corresponds to one division of the total scale range.

The pyrometer is of the direct-insertion type and can

be used for checking on quick-heating furnaces, muffles, checkers, stacks, etc., where only occasional readings within the scale range are desired.

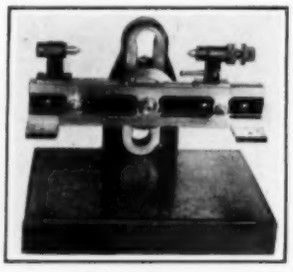
—169—

Fixture, Sine-Bar

Blodgett Engineering & Tool Co., 14th & Dalzelle, Detroit, Mich. [Vol.62,p.865.]

The fixture is suitable for testing tapers on cylindrical parts, and angles on planed and surface-ground work.

The sine bar is hardened and ground, measures 1¼ x 2⅝ x 16 in. and is pivoted with



T-slots on both edges. It is mounted on a stud that has a vertical adjustment to accommodate work of various sizes.

The maximum size of the work that can be supported on the centers is 10 in. long and 3 in. in diameter. The base measures 12 x 16 inches.

—170—

Testing Machine, Krause

F. W. Jaeger, 140 Liberty St., New York, N. Y. [Vol. 62,p.558.]

The hydraulically-operated, material-tester is designed for use in tension, compression, bending, shearing, punching and Brinell determination, is guaranteed to maintain accuracy within 1 per cent and is being built and marketed in two styles as to the type of gage. Glycerine is used for the pressure medium.

The work heads float laterally and all knife edges and delicate points in construction have been eliminated. Its working capacity is rated at 40 tons.

Regular equipment includes the machine with hand pump and gage assembly in two styles with the attachments and fixtures for tension, compression, bending and Brinell determinations. Motor drive to the pump, the

accumulator and other special fixtures are available to specification.

Since the machine is sufficiently rigid and self-contained, no foundation is required.

—171—

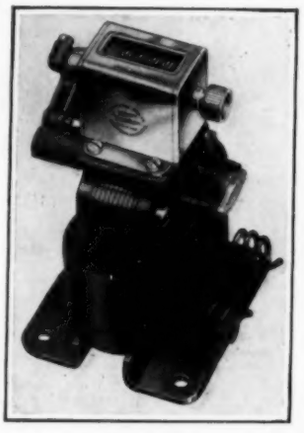
Counter, Magnetic, Form U

Veeder Manufacturing Co., Hartford, Conn. [Vol.62,p. 561.]

A magnetic counter suitable for locating at some distance from a machine or point at which a count is required is being manufactured in two sizes, the Form U and the large. The Form U is illustrated.

At the point where the count is to be taken some mechanical style of rotary, wiping or reciprocating "make and break" contact is necessary to close and open the counter circuit, and a source of direct current to operate an armature within the counter.

With this piece of equipment, which can be supplied to specification for any reasonable voltage, it is possible to make installation in a central office to get count on the



performance of one, a group or an entire line of machines, or particular movements of any piece of equipment on which a record is desired.

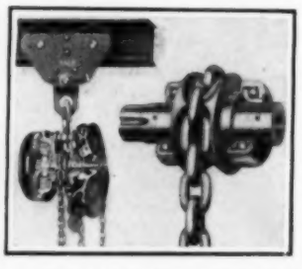
Material Handling Machinery

—172—

Chain Block, Spur-Geared, Ball-Bearing

Yale & Towne Manufacturing Co., Stamford, Conn. [Vol.62,p.294.]

A ball-bearing supported load sheave is the principal feature in the line of chain



blocks which the company is putting on the market in sizes from ½- to 20-ton capacity.

The entire load is taken on the bearings which are designed with ample size and strength to withstand the sudden shock overload to which this class of equipment is frequently subjected in every-day service.

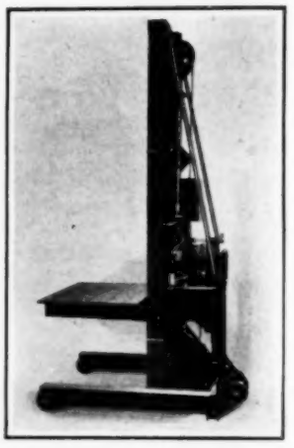
—173—

Elevator, Portable, Gear-Inclosed, Governor-Controlled

Barrett Cravens Co., 1328 West Monroe St., Chicago, Ill. [Vol.62,p.672.]

The machine is built in a number of styles besides the one illustrated to suit varying conditions, but the lift mechanism is common to all of them. It may be either hand or motor operated, the motor, when specified, being set to chain-drive without interference with the provision for hand control. The motor functions only in the upward direction as the lowering of the platform is accomplished through the governor and the automobile-type brake-wheel, which is built as a part of the safety mechanism.

Two lift shafts, having squared ends, extend from the housing which completely incloses the mechanism. With them the platform may be



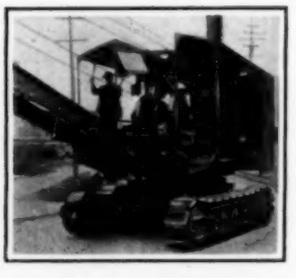
lifted slowly or rapidly with a corresponding increase or decrease in available leverage. The gears are of steel with cut teeth. The pinions are case hardened and run in oil in the gear case.

—174—

Crane, Crawling Tractor, Type DC

Industrial Works, Bay City, Mich. [Vol.62,p.791.]

The 10-ton crawling tractor crane has a system of split gears making each tractor belt a separately controlled unit. Each belt is directly controlled by two friction clutches and brakes in the revolving upperworks. Motor speeds have been increased 25 per cent above that customary, providing speed for handling materials. A double-clutch mechanism



operates the two slewing-bank clutches by means of one lever.

The crane can be equipped to operate with a steam engine, electric motor, gasoline motor or fuel-oil engine of the Diesel type. It operates with clamshell or dragline bucket, electro-magnet hook and block or grapple. Any equipment that operates on a boom can be applied. The distance between the two end sprockets is 10 feet.

— 175 —

Stacker, Worm-Drive

Lewis-Shepard Co., Watertown Station, Boston, Mass. [Vol.62,p.792.]

The equipment is driven by a ½-hp. motor, and has a lifting speed ranging from 9 ft. per minute on

500-lb. capacity. The stacker can be equipped with an electric type of control, allowing the operator to ride up with the load.

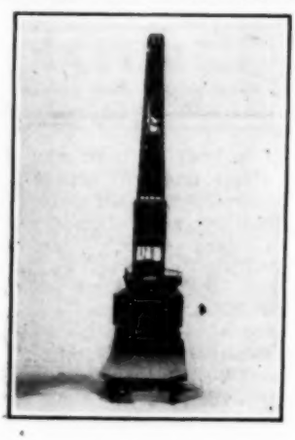
— 176 —

Crane, Electric, Portable

Elwell-Parker Electric Co., Cleveland, Ohio. [Vol.62,p. 860.]

An improvement has been made on the type-CK portable electric crane by adding the telescoping boom illustrated. There are four settings between 12 and 17 ft. The boom is all steel and is raised or lowered by a set of cables operated from an electric motor-driven hoist.

The side channels of the boom are latticed and gusseted, and the enveloping section is made of formed-plate steel which provides a support for the telescoping



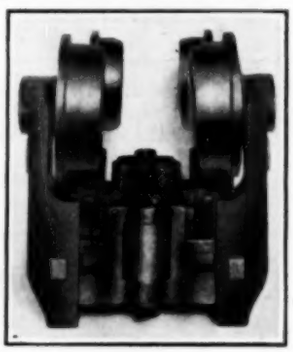
portion. The boom may be furnished for either hand or motor slew as specified. The crane controllers have been redesigned and suitable safety features are incorporated. The minimum distance from top of boom to hook is but 23 inches.

— 177 —

Trolley "Alaround"

Reading Chain & Block Corporation, Reading, Pa. [Vol.62,p.1018.]

An improved form of trolley is provided with an adjustment to fit a variety of I-beam sections. The trolley can be arranged to fit beams from 5 to 8 in. light or heavy sections. The wheel base is 12 in., and the minimum gage is 3 in. and the maximum 6 in. The swivel construction



enables the trolley to pass curves from 15-in. radius up. Each wheel is equipped with double-row ball bearings.

— 178 —

Truck, Dolly

Marion Tool Works, Inc., Marion, Ind. [Vol.62,p.755.]

The company has brought out a dolly truck for moving heavy loads such as crates,

barrels, boxes, tote boxes, rolls of paper and similar loads.

The body is made of malleable iron, the wheels and axles of steel suitably mounted on roller bearings. The dollies are made in two sizes, 24-in. and 32-in., and are provided with holes for attaching special skids, bodies or platforms.

— 179 —

Trailer, Heavy-Duty, Type A-510

Mercury Manufacturing Co., 4118 South Halsted St., Chicago, Ill. [Vol.62,p.792.]

The trailer frame is made of T-iron. The wheels are cast steel, fitted with roller bearings. The brackets provide a 3-in. bearing surface

for each end of the axle. The swivel consists of two cast-steel plates resting on one another and provided with a ball-bearing race.

The trailer is made in three sizes, 36x72 in., 42x72 in. and 48x84 in., and has a capacity of 4 tons. Provision is made for fastening various styles of bodies to the frame. Racks, 33 in. high, are furnished as standard equipment.

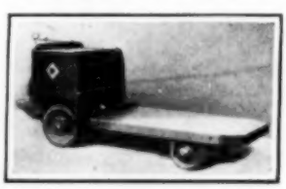
— 180 —

Tractor, Electric-Lift

Elwell-Parker Electric Co., Cleveland, Ohio. [Vol.62,p. 865.]

The unit is of a broader gage, 30 in., than those designed particularly for inside operation. It is especially suited for runways that are not altogether smooth.

The 22-in. drive wheels are



fitted with double-row ball bearings and with radial and thrust bearings, the latter measuring 7 in. in outside diameter. The wheels are carried on drop-forged knuckles that support the weight of the axle, frame and load on ball bearings recessed in a cup at the upper end. All rods are placed to give a maximum of clearance.

The full-floating alloy-steel drive shafts are fitted with chrome-vanadium universal joints. A drop-forged differential carries a phosphor wormwheel, lock-bolted between the two halves of the differential cage. The lift of the platform is 6½ inches. It measures 40 in. in width and 72 in. in length. The lowest position is 17 in. above the floor.

— 181 —

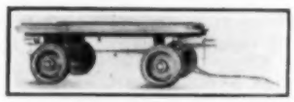
Trailer, Industrial, Twin Fifth-Wheel

Cowan Truck Co., Holyoke, Mass. [Vol.62,p.944.]

The twin fifth-wheel type is intended for general haulage work and has a capacity of 4,000 pounds.

It is made with a 4-wheel steer and trailing handle that may be attached to either end. The wheels are 16 in. in diameter and are equipped with solid-rubber tires.

The platform is constructed to overhang the wheels to pro-



tect them from unnecessary bumps.

The skeleton of the truck consists principally of standard I-beams placed so as to give rigidity to the trailer.

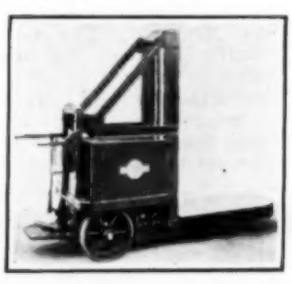
The dimensions of the platform are 36x72 in., standing 21 in. high. The weight of the unit is 750 lb. Other sizes can be built to specifications.

— 182 —

Truck, Tier-Life, Type GEH

Crescent Truck Co., Lebanon, Pa. [Vol.62,p.1016.]

The electric-lift truck is similar to the design that was described on p. 904, Vol. 61 of the *American Machinist*, and is equipped with an improved form of lifting mechanism. It has a capacity to lift 4,000-lb. loads 6 ft. high. The overall height is 87 in., the width 41 in., and the length 112 in. The turning radius is 95 in. and



the wheelbase is 59 in. The platform is 26 in. wide and 54 in. long. The driving unit is interchangeable with other units manufactured by the company.

The elevating unit is operated through a worm and wormwheel to a single screw, the complete unit operating on ball bearings and running in oil. All of the working parts are made easily accessible.

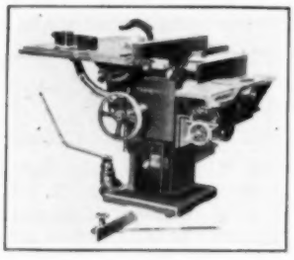
Woodworking Machinery

— 183 —

Wood Worker, Combination, "Type E"

Tannewitz Works, 315 *Front Ave. N. W., Grand Rapids, Mich.* [Vol.62,p.40.]

The machine known as "Type E" consists of a tilting table saw bench with a 6-in. jointer mounted on the side, a 2-hp. motor mounted on the



back, and a three-wheel ball-bearing truck underneath.

The saw bench table measures 30x36 in. and stands, on the truck, 34 in. above the floor. The maximum saw diameter is 15 in., while dado heads up to 3-in. wide can be used. Widths up to 17 in. can be ripped.

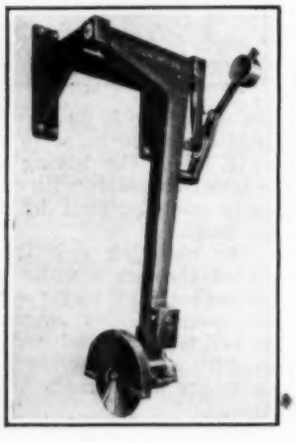
The jointer table is 8 in. wide by 32 in. in total length. The knives are 6-in. long. A 22-in. tilting fence is also furnished.

— 184 —

Swing Saw, High Production, No. 136

Oliver Machinery Co., 1015 *Clancy Ave., Grand Rapids, Mich.* [Vol.62,p.519.]

A swing saw on which the driving motor is built integral with the saw arbor has been designed. The motor housing fits into the main frame to allow 2 in. of vertical adjustment so saws can be reduced 4 in. in diameter from their size when new. The end housings, which are



interchangeable, are made of cast aluminum and carry dust-proof radial ball bearings. Alemite lubrication is used.

The standard size saw is 16 in. in diameter and will cut planks 3½ in. thick and 12 in. wide.

The hanger bracket is designed for the attachment of the machine to a wall or ceiling, as the case may require. A safety switch is mounted on the frame just above the motor. The equipment regularly includes, with the saw, the safety switch, semicircular guard and 16-in. saw, although an 18-in. saw may be used. An extra aluminum front-guard can be furnished to specification. The weight is 800 lb. when crated.

— 185 —

Saw, Gear-Drive, Universal, State

R. L. Barker & Co., 642 *W. Washington Blvd., Chicago, Ill.* [Vol.62,p.520.]

The general-purpose machine is designed for cutting wood, bakelite, metals and similar compositions.

The working unit of the machine includes the ball-bearing saw spindle connected to a motor drive by helical gears, and a ½-hp. motor. It can be adjusted vertically by means of a handwheel. The table is hinged with the pedestal and is sufficiently large to handle stock 12 in. in width.

The saw is 8 in. in diameter and will cut to a maximum depth of 2⅜ in. The table measures 23x28 in. and stands 34 in. in height. The machine weighs 300 pounds.

The machine is complete in itself and will use line current for power.

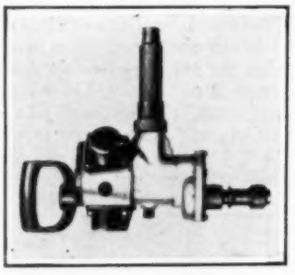
— 186 —

Drill, Pneumatic, Wood-Boring, Size "DD"

Ingersoll-Rand Co., 11 *Broadway, New York, N. Y.* [Vol.62,p.599.]

A reversible pneumatic drill suitable for drilling in wood up to 1 in. in diameter has been added by the company to its line of similar equipment.

The construction is essentially the same as in the other sizes manufactured as pertains to the 3-cylinder



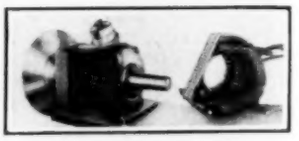
motor, the aluminum case with steel bushings cast in place for the bearings and throttle, the renewable crank-pin sleeve and the renewable and interchangeable cast-iron cylinders. Its average working speed is 705 r.p.m. It measures 15 in. overall and weighs 15 pounds.

— 187 —

Motor for Circular Saw

Forbes & Myers, 172 *Union St., Worcester, Mass.* [Vol. 62,p.943.]

The motor is similar to the three-phase induction type manufactured by the company, except that one side of



the frame is cut away and all wires omitted from the stator winding on this side. The unbalance is compensated for in the design. The rotor is standard and rotates on ball bearings. Motors for either two or three-phase current of any voltage up to 550 and from ¼ to 5 hp. are obtainable. The saw is mounted directly on the motor shaft, no other bearings being required.

Small Tools

— 188 —

Drills, Ground

Union Twist Drill Co., Athol, Mass. [Vol.62,p.37.]

The drills which are made in wire and small jobbers sizes are ground all over in special appliances used in connection with centerless grinders. They are made from a special steel.

It is claimed that the grinding cuts under and removes the carbonized surface which is apt to occur on the drill rod.

— 189 —

Holder, Boring-Tool, Bench-Lathe

J. F. Smith Tool Co., 33 *Westview Ave., Dayton, Ohio.* [Vol.62,p.40.]

The holder will take boring-tools made of a maximum

¾-in. bar. It is adjustable in height.

It is made with an offset turned on the end of the shank and is 4-in. long. The clamp which fits over the off-set is made in two parts with screws binding in the center. When tightened these screws draw the clamp down on the shank and bind the boring tool. The holder may be centered parallel with the hole to be bored.

— 190 —

Broach, Interchangeable-Cutter

Cutter & Wood Supply Co., 274 *Friend St, Boston, Mass.* [Vol.62,p.177.]

The tool, known as the "I. C. broach," is intended for use in repair shops and service stations. It is comprised

of a body, a pilot and five cutters and will broach any intermediate-sized hole by 0.001-in. steps between the standard broach size and 0.006-in. oversize, inclusive. The nominal sizes of the broaches vary from a diameter of ½ in. up to and including 1½ in. by steps of 1/32 in. The equipment includes an extra pilot and six extra oversize cutters.

— 191 —

Reamer, Line, Expansion "Mirr-O-Ream"

Samuel Hocking & Son, 37 North Prince St., Lancaster, Pa. [Vol.62,p.407.]

The "Mirr-O-Ream" has been developed as an improvement to the company's line of expansion reamers that

were previously described on page 976, Vol. 56, of the *American Machinist*. The tool is particularly adapted for reaming piston wristpin holes.

The essential change lies in the addition of a pilot to the end of the reamer by lengthening the shank and the cutters and by grinding this additional cutter surface to guide the cutting edges. This design makes the pilot diameter variable in step with the cutting edges. Nine sizes are made that cover a diameter range between 0.615 and 1.531 inches.

— 192 —

Saw, Metal-Slitting

Union Twist Drill Co., Athol, Mass. [Vol.62,p.755.]

The slitting saw illustrated has a distinctive feature in that the teeth are designed and ground to cut on their

edges as well as on the center diameter edge. This feature is said to materially improve the quality of the work performed and to increase the speed of cutting, as well as to prolong the life of the cutter. The saw is made in a variety of sizes.

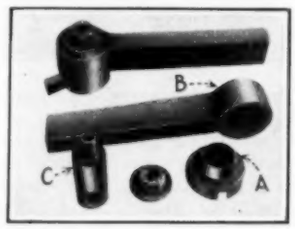
— 193 —

Tools, Lathe and Planer

Montgomery Tool and Machinery Co., 139 Main St., Woonsocket, R. I. [Vol.62, p.977.]

The line comprises straight and angular toolholders for the lathe, shaper, turret and boring machine, adjustable holders for the planer in which the cutting bits may be set at any desired angle and a double-lift boring tool.

The angular tools have bits of trapezoidal section, giving a fixed top rake of 12 deg., and a side clearance of 6 deg., right- and left-



hand respectively, so that for straight turning in either direction the bits need be ground for resharpening on

the end only. The shanks are drop-forged of alloy steel in two parts.

In the planer tool, the boring tool and the lathe tool similar provisions have been made to minimize the work of

the operator in grinding and in setting. All of the tools are made in three standard sizes of shank. The parts are of alloy steel and are case-hardened. Special sizes and shapes of cutting bits may be obtained from the maker.

— 194 —

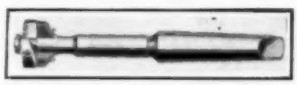
Knives, Boring, Rapid

Wisabo Rapid Drill Co., 200 West Monroe St., Chicago, Ill. [Vol.62,p.977.]

The knives are intended for use on boring machines, turret lathes and similar machines that perform boring operations.

They are made of high-speed steel and carry the form of a disk with two cutting edges facing each other radially. They have bevel cutting edges, but can be obtained with straight cutting edges and a cutting angle of 65 degrees.

Holders are supplied with Morse shanks. The knives, made in diameters from $\frac{1}{2}$ to 6 in., are divided into groups. For each group, only one holder is necessary. The holder, driving-plate pin-guide bolts, pilots, closing plates and set screws are



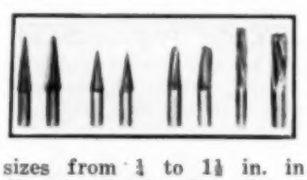
made of steel, hardened and polished. The knives are made in $\frac{1}{32}$-in. sizes, but may be obtained in $\frac{1}{64}$-in. sizes to specification.

— 195 —

Cutters and End Mills, Die-Sinking

Eclipse Interchangeable Counterbore Co., 7410 St. Aubin Ave., Detroit, Mich. [Vol.62,p.1017.]

A complete line of die-sinking cutters and end mills are made of high speed steel, carefully hardened, ground and inspected. The angle cutters are made in sizes ranging from $\frac{7}{8}$ to $1\frac{7}{8}$ in. in diameter with side angles of 5, 7, 10 and 12 deg. The end mills are made in



sizes from $\frac{1}{4}$ to $1\frac{1}{4}$ in. in diameter, having from 5 to 8 flutes. The ball and roughing cutters are from $\frac{1}{2}$ to $1\frac{1}{2}$ in. in size. Boss cutters $\frac{1}{2}$ to $2\frac{1}{2}$ in. in diameter are also being manufactured.

— 196 —

Tapping Attachment and Stud Setter, Style J

William L. Procunier, 18 South Clinton St., Chicago, Ill. [Vol.62,p.255.]

The quick-change equipment has been added to the company's line to increase its general range of usefulness.

Tools are changed while the tapping attachment is in motion by lifting the loose

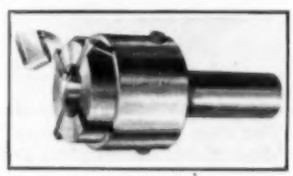
collar which releases the driving balls and allows the tool to drop free. Studs are not loosened after driving, when the attachment is made to reverse the stud setter. There are four sizes that range from the smallest to a $\frac{3}{4}$ in. tap as the maximum.

— 197 —

Diehead, Rotary, Self-Opening, Style K

Geometric Tool Co., New Haven, Conn. [Vol.62,p.561.]

The diehead is designed with particular reference to the various types of multi-spindle automatics and live-spindle machines, and is made small in relation to its capacity in order that it may swing freely in the limited space available. It is simple in construction and is completely inclosed so that dirt



and chips cannot get into the mechanism. Adjustments for diameter are made by means of a spanner-operated ring surrounding the shank behind the head. The chasers may be used to cut threads close to a shoulder without alteration or adjustment.

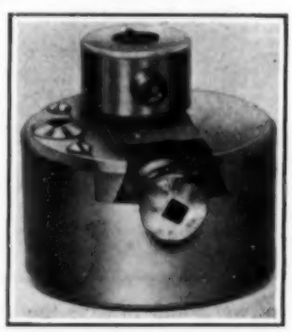
It is made in $\frac{7}{8}$-, 1-, $1\frac{1}{4}$- and $1\frac{1}{2}$-in. sizes. Chasers can be furnished for any commercial diameter, pitch or thread-form within this range.

— 198 —

Chuck, Offset, Boring

Detroit Pattern Works of the Sommers Industries, 534 East Fort St., Detroit, Mich. [Vol.62,p.256.]

The offset chuck is adapted to accurate boring operations. The toolholder will take



round, square or hexagonal stock up to $\frac{3}{4}$ in. inclusive and can be set on center or a

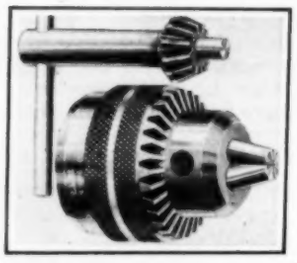
maximum of 2 in. off center. The body, which is bored for a No. 4 Morse taper shank, is 4 in. in diameter and with the toolholder is 3½ in. overall.

— 199 —

Chuck, Drill, "Red-Line"

Oberlin Manufacturing Co., Oberlin, Ohio. [Vol.62,p. 675.]

The chuck is being manufactured in two styles. One, for general machine shop uses, ranges in size from ¼ to 1 in. and is made of steel. The other size, which is intended for use on portable



tools, is made of a special material said to be as strong as ordinary cold-rolled steel and to weigh only a third as much.

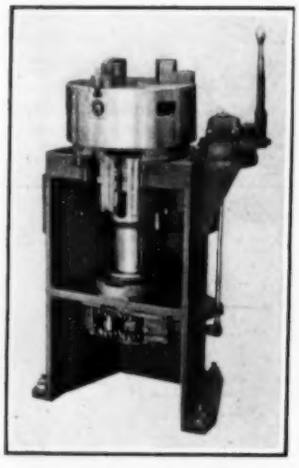
The chuck design has been altered as compared to its original construction by decreasing the length of the outer sleeve and providing support for practically the entire length of the jaw.

— 200 —

Chuck, Power-Operated

Bullard Machine Tool Co., Bridgeport, Conn. [Vol.62, p.866.]

The purpose of the chuck is to permit a definite control of the grip exerted on



the work and to ease the effort required by the operator.

Its operation is controlled through a hand lever to a double clutch with angular teeth and compound gears. Power is provided in either direction for a vertical pull which is exerted by a screw and nut and is transferred to the three jaws of the chuck by a bell-crank lever. When the pressure is set, it cannot be released except by reversing the lever. The chuck has been applied to the company's four spindle and six-spindle Contin-U-Matic and Vert-Au-Matic for the operation of both standard and special fixtures.

The time that is required to open or close the new power-operated chuck is not more than two seconds.

— 201 —

Chucks

Skinner Chuck Co., New Britain, Conn. [Vol.62,p. 867.]

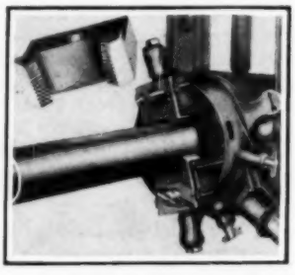
The company has purchased the chuck business of the Garvin Machine Co., which includes a large assortment of chucks that the Skinner Chuck Co. has been supplying Garvin for a number of years. Replacement parts and repair work will be carried out as in the past.

— 202 —

Pipe Stock Ratchet

Reed Manufacturing Co., Erie, Pa. [Vol.62,p.294.]

The addition of a double-thread, cut in the tapering throat of the dies, has made



it possible to eliminate the use of any lead screw from this ratchet pipe stock.

A four-point guide, cam-actuated by an arrow-marked lever on the side of the stock, centers the dies and controls the thread alignment. It advances as the thread is cut without gripping the pipe. Dies are held in place by the company's "Instant Clamp Screw."

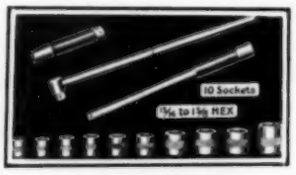
Right- or left-hand threads of any pitch can be started, without removing the end burr on the material, and may be cut on bolts or pipes to a maximum size of 2-in. pipe.

— 203 —

Wrench Set, Heavy-Duty, No. 120

Husky Wrench Co., 928 Sixteenth Ave., Milwaukee, Wis. [Vol.62,p.556.]

The heavy-duty set is intended for use primarily in the industrial field. The set consists of a series of ten sockets that range from ⅞ to 1⅛ in. hexagon, and in-



cludes three styles of handles. The parts are machined from selected bar stock, are hardened and are rust-proofed by nickel plating. They carry a service guarantee by the makers.

— 204 —

Wrench, Socket, Reversible

American Saw & Manufacturing Co., 71 Boylston St., Springfield, Mass. [Vol.62, p.827.]

In the design of the wrench, toothed ratchets, pawls and springs are eliminated and the number of essential parts

reduced to three; the lever, the head and the collet.

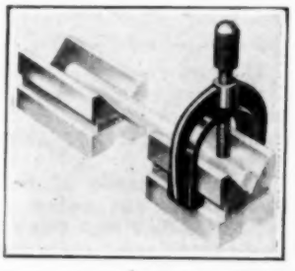
No sockets are supplied with the wrench, it being the intention to use the standard makes which are already on the market.

— 205 —

V-Blocks and Clamp, No. 749

Brown & Sharpe Manufacturing Co., Providence, R. I. [Vol.62,p.520.]

The company has added a set of V-blocks and clamp to its line of small tools for gen-



eral machinist's use, consisting of a set of 2 in. by 1½ in. blocks and one clamp.

The blocks are made of cast iron and are intended for holding a circular piece, of length within reason and up to 1½ in. in diameter, to steady and locate it for drilling, milling, grinding or marking and laying out.

— 206 —

Hammer and Vise Jaws, Copper, "Injurnot"

National Alloys Co., 2120 East Woodbridge St., Detroit, Mich. [Vol.62,p.560.]

The hammer and vise jaws are made of pure, sand-cast copper and are designed with

the point in mind of providing a high-class tool which will outlast the usual soft lead, as well as to have a high salvage value. The hammer and jaws are made in all sizes.

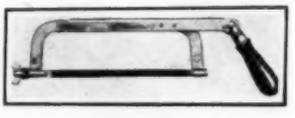
— 207 —

Hacksaw Frame

L. S. Starrett Co., Athol, Mass. [Vol.62,p.675.]

The frame has been designed particularly for work in cramped quarters or strained positions.

The handle can be adjusted to thirteen positions on a



locking swivel to locate it to the most advantageous relation with the frame and the blade may be set in any one of four directions. The frame will take any length blade between 8 and 12 inches.

— 208 —

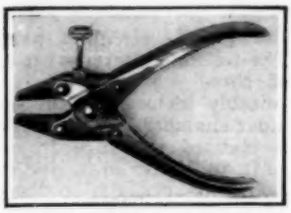
Pliers, Hand-Vise

William Schollhorn Co., 414 Chapel St., New Haven, Conn. [Vol.62,p.711.]

The addition of a thumbscrew locking arrangement has been made to the company's line of pliers to increase their usefulness.

Parts can be held for soldering and rod stock can be

clamped and rotated while it is being filed. The thumb screw may be backed out when not in use and the



pliers used in the ordinary manner without interference from the clamping arrangement.

— 209 —

Punch, Imperial, No. 8

Whitney Metal Tool Co., Rockford, Ill. [Vol.62,p.754.]

The tool is arranged for a positive stripping action, is equipped with roller bearings and is designed to take the company's standard punches and dies.

It will operate inside of 90 deg. and is intended for use on such work as stand-

ing seams, stacks and skylights. The parts are drop-forged, heat-treated and hardened.

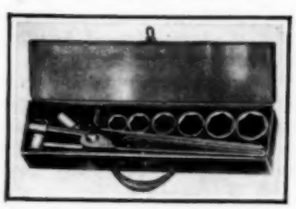
The capacity is ¼-in. hole in ¼-in. iron. The throat depth is 2¼ in. and there is sufficient reach to punch holes in the center of 4¼ in. It has a ⅝-in. height of gap, is 25 in. overall and weighs 16 pounds.

— 210 —

Wrench, "Snap-On" Giant Service

Motor Tool Specialty Co., 14 East Jackson Blvd., Chicago, Ill. [Vol.62,p.1016.]

A combination of heavy wrenches, intended for repair and maintenance work, the set comprises six sockets, ranging from 1½ to 2⅝ in. in size, a 1-in. diameter by 24-in. long sliding bar, and two ¾-in. square extension bars, 8 and 16-in. long. The set can be furnished with a



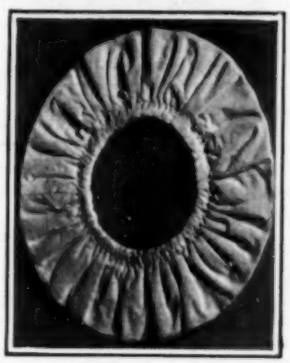
flat ratchet having a ¾ in. adapter plug, if required. Turning the handle over and snapping the sockets on the opposite side reverses the action. A spring-backed ball locks them firmly and two ball stops hold them in place. The set is packed in a metal carrying case, 4x6½x24½ in. in size.

— 211 —

Buff, Centerless

Bias Buff & Wheel Co., Inc., 342 Madison Ave., New York, N. Y. [Vol.62,p.218.]

The buff is designed to present all of the threads in the weave of the material at a



constant angle of approximately 45 deg. with a tangent to the outer edge. A complete wheel is built up of sections and secured by means of special flanges, which are furnished as required with the first buff.

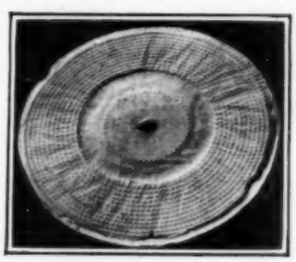
Exhaustive tests are said to show, among other things, high wearing qualities due to the constant angle of the thread to the circumference, a minimum throwing of loosened threads of lint and excellent retaining qualities for polishing material.

— 212 —

Buff "Biasplex"

Bias Buff and Wheel Co., 342 Madison Ave., New York, N. Y. [Vol.62,p.1017.]

An improved form of buff, called the "Biasplex," incorporating the principle used



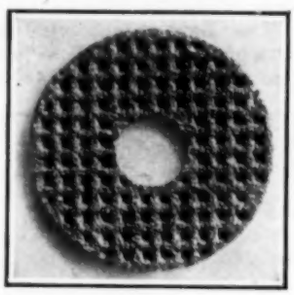
in the bias buff; it offers a hard fast-cutting wheel that can be used on any work where a pierced buff is required. It is made in 30 ply, either bleached or unbleached sheeting, the last mentioned being recommended for the average work. Five sections of the buff make a wheel of 2½ in. face.

— 213 —

Disk, G. I. A., Deep-Corrugated

Gardner Machine Co., 410 East Gardner St., Beloit, Wis. [Vol.62,p.217.]

The grinding disk is especially designed for use upon work having large surfaces to grind. The surface of the disk is corrugated with holes extending practically through to the cloth backing. The purpose is to provide chip



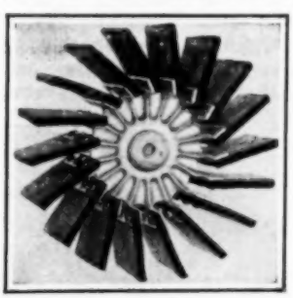
clearance and to prevent glazing the disk, thus decreasing the tendency of the work to heat up when being ground rapidly.

— 214 —

Buffing Wheel, Multipad

N. A. Strand & Co., 5001 North Lincoln St., Chicago, Ill. [Vol.62,p.482.]

The wheel is intended primarily for buffing lacquer paints on automobile bodies



after the paint has been sanded and rubbed down and to thereby replace the much slower hand operations. The wheel is designed for use with the Strand flexible-shaft grinding and polishing machines of the ½-hp. size.

The pads which are held to the shoulders of the wheel by screws may be of felt or other material suited to the requirements of the work, and are 3 in. wide.

— 215 —

Lapping Device

Danly Machine Specialties, Inc., 4909 Lincoln Ave., Chicago, Ill. [Vol.62,p.827.]

The laps are provided with a tapered thread and locking unit and copper laps of

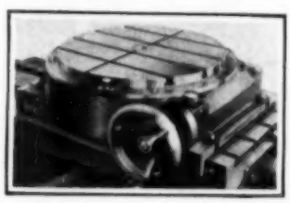
the spring type. The smallest size takes from ½ to ¾ in. and is equipped with a No. 1 Morse taper shank, the next size is applicable for sizes from ¾ to 1½ in. with a No. 2 Morse taper and the largest is adapted to sizes from 1½ to 1¾ in., also having a No. 2 Morse taper shank.

— 216 —

Table, Indexing, Circular

Pratt & Whitney Co., 111 Broadway, New York, N. Y. [Vol.62,p.943.]

The table consists of a cast-iron base with a circular top, 20 in. in diameter, provided with four T-slots and a wormwheel as an integral part. It is driven by



a hardened and ground worm attached to a handwheel at the front part of the unit. The top is graduated in degrees for approximate indexing and a small, slow-motion handwheel is attached to the worm shaft for exact setting to a graduated dial equipped with a vernier attachment. Any desired position may be locked.

The table is scraped on the under face and protected by two cast-iron lips that form a rest when it is removed from the machine. Four T-slots are provided for fastening it to the machine. Polar dimensions may be used for measuring angles on the table with a saving of time.

— 217 —

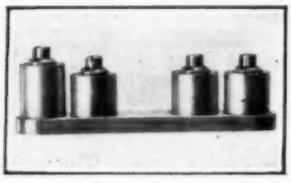
Buttons, Toolmakers'

Brown & Sharpe Mfg. Co., Providence, R. I. [Vol.62,p. 331.]

The set of four toolmakers' buttons is being made in

three diameters of 0.3, 0.4 and 0.5 in. respectively and is mounted on a protecting steel base.

Three of the buttons are ½-in. high while the fourth measures ⅝-in. This difference makes it possible to locate two holes which may be



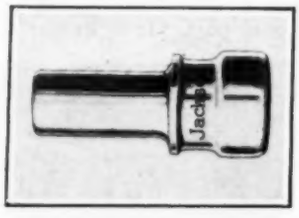
set so close together that an indicator point would not pass between the buttons. A ⅜-in.-40 button holding screw is furnished with each button.

— 218 —

Rivet Set, Alloy-Steel, "Jackset"

Ingersoll-Rand Co., 11 *Broadway, New York, N. Y.* [Vol.62,p.862.]

The tool is forged, and hardened so that its application to hot rivets will not draw the temper. It is



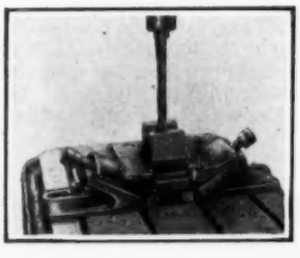
claimed that the delays and losses due to the breaking of carbon rivet sets has been largely eliminated by the use of the durable material in this set.

— 219 —

Vises, Machine, Divided

Coats Machine Tool Co., Inc., 108 *West 40th St., New York, N. Y.* [Vol.62,p.34.]

The vises for holding parallel, tapered or irregular pieces are adjustable in height



and have an unlimited length of span. The jaws may be placed in any offset position. Their main field of usefulness is in the shop, mounted on the tables of milling, drilling, shaping, slotting and planing machines.

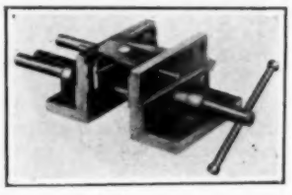
The body and jaws are made of cast iron faced with hardened steel and have serrated surfaces to insure a better grip. The screws are of steel, and the jaws are fitted in V-guides with adjustable steel gibs to take up wear. Three sizes are manufactured corresponding to the following widths of jaws: 2½ in., 5 in. and 10 inch.

— 220 —

Vise, Drilling

Armstrong Manufacturing Co., 4 *Second St., Portland, Ore.* [Vol.62,p.790.]

The light-weight vise is arranged so that either jaw may be clamped to the table



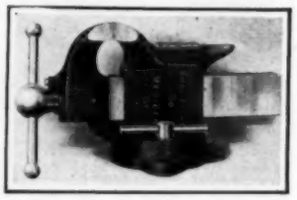
of the drilling machine and the remaining jaw made movable. Notches machined in the jaws form a support for all forms of flat work. Vertical and horizontal grooves are provided for holding round material, and by the use of cross rods, irregular shaped work can be secured in various positions.

— 221 —

Vise, Garage, "Hercules"

Charles Parker Co., Meriden, Conn. [Vol.62,p.942.]

The vise is heavier in construction than similar ones manufactured by the com-



pany, and is intended for garage and machine-shop use.

Renewable steel jaws, a swivel base, a ring that is expanded against the side walls of the base for tightening, and solid construction of the under portion of the vise are included in the design. The vise handle is arranged so that it will stay in any position in which it is placed for convenience.

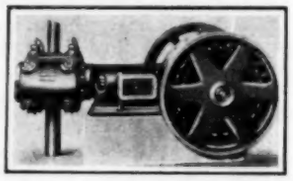
Miscellaneous Equipment and Supplies

— 222 —

Air Compressor, Class N-SE

Chicago Pneumatic Tool Co., 6 *East 44th St., New York, N. Y.* [Vol.62,p.559.]

The principal feature of the line of air compressors which the company has added



to its other lines of similar equipment lies in the integral design of the flywheel and the synchronous driving motor.

The ordinary location and contour of the rotor has been taken for the stator, which is mounted in a cradle support secured to the compressor frame and bored concentric with the compressor bearing. The rotor poles are mounted on the inside rim of the overhung flywheel which is crowned on the outside to belt drive an exciter or other auxiliary.

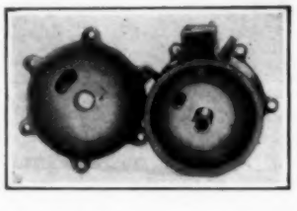
This construction is said to lessen the floor space required. The compressor is available for pressures between 100 and 125 lb. and is designed for displacement ranging between 139 and 1,000 cu.ft. per minute.

— 223 —

Compressor, Rotary, Valveless

John Milne, 273 *Greenwich St., New York, N. Y.* [Vol. 52,p.791.]

The compressor is built without the usual flywheel, piston, crankshaft and pulley. A guided motion of the inner rotors in connection with the casing causes the suction and the discharge action. No coupling is required, as the unit is a direct motor mount. Features are that it is compact and composed



chiefly of circular parts. The working portions consist of three moving parts, all suitably inclosed in the cylinder chamber. The capacity is claimed to range from ½ cu.ft. to 10,000 cu.ft. and operates at speeds from 350 to 3,600 revolutions per minute.

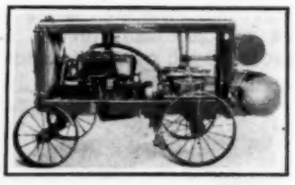
— 224 —

Air Compressor, Portable, Class WK-314

Sullivan Machinery Co., Chicago, Ill. [Vol.62,p.828.]

The machine is of V-type construction, having 4 cylinders and is rated at 220 cu.ft. of air per minute. The unit is mounted on a four-wheel truck.

The horsepower input is rated as 43 at the rated speed



of 800 r.p.m. against 100 lb. air pressure. The cylinders are 5½ in. in diameter and have a 5-in. single-acting stroke.

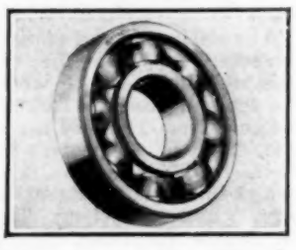
The driving unit is a 4-cylinder Buda, 43-hp. gasoline engine.

— 225 —

Ball Bearing

Strom Ball Bearing Manufacturing Co., 4530 *Palmer St., Chicago, Ill.* [Vol.62, p. 675.]

A radial ball bearing, known as the Super-Strom, is being marketed to increase



the load-carrying capacity over a given size of bearing of usual construction.

Its outside dimensions make it interchangeable with other standard bearings. The races are of the deep-groove type, however, and the balls have been increased either in size

or number over those usually employed.

The bearing is made in a wide range of sizes which the company has listed together with a load-carrying table to assist in efficient selection.

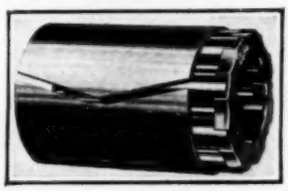
— 226 —

Bearing, Roller, Commercial

Bond Foundry & Machine Co., Manheim, Lancaster Co., Pa. [Vol.62,p.638.]

The roller bearing is for use in all classes of machinery and equipment where roller bearings can be applied.

It consists of solid-steel rollers which are hardened and ground and a pair of



pressed-steel retainers, tied, spaced and held rigidly in exact alignment by stay rods. A split outer race made of high-carbon steel is included or omitted as required.

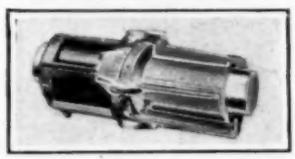
The bearing is available for medium and for heavy duty and takes in a range from ¾ to 4-in. shafts.

— 227 —

Bearing, Collar-Oiling, Cleveland Type

Hill Clutch Machine & Foundry Co., Cleveland, Ohio. [Vol.62,p.905.]

The bearing is solid in construction and capable of withstanding heavy pressures. It is supplied with dust-proof



ends, or heavy thrust ends when specified, and built for shafting ranging from 1 7/16 to 14 in. in diameter.

A positive oil feed and distributing system produces a forced oil circulation, the oil needing to be replenished only at widely separated intervals.

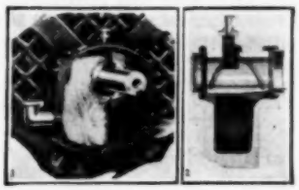
— 228 —

Lubrication System for Small Motors

Century Electric Co., St. Louis, Mo. [Vol.62,p.979.]

The wool-yarn system is intended for application to fractional horsepower motors that do not receive attention for long periods or that are subjected to freezing temperatures.

Continuous strands of wool are packed into an oil well so that a direct contact with the



surface of the armature shaft is obtained. A constant pressure of the wool yarn on the shaft is assured by a spring attached to the under side of the oil-well cover. The strands of wool yarn assure capillary attraction for delivery of the oil to the shaft from the supply in the oil well below.

The use of cotton or wool waste is not recommended. Any good grade of mineral oil is a satisfactory lubricant, providing it is of medium viscosity, but an oil that will flow at low temperature is preferable.

— 229 —

Bearing Metal, "Mahanite"

J. E. Louden & Co., Boston 10, *Mass.* [Vol.62,p.673.]

The metal, which is intended for general application in bearings, is being marketed in solid bars, solid bushings and as a liner for cast-iron bushings. The bars are standard at 24 in. in length by ½ to 1¼ in. in diameter, but other sizes as well as tubes are available to specification. Both solid and lined bushings in all sizes are furnished to order, finished or unfinished.

The material casts at 850 deg. F., using fixtures similar to those for die castings. It is secured in lined bushings by means of dovetails; all lining and relining being done at the factory. A material thickness in lined bushings of ¼ in. for each inch of shaft diameter is recommended. Any good grade of light motor oil is recommended as a satisfactory lubricant.

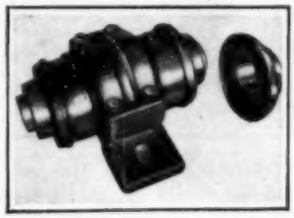
— 230 —

Dust Seal, Extra for Bearings

The Fafnir Bearing Co., New Britain, Conn. [Vol. 62,p.365.]

The extra dust seal may be applied to all sizes and types of Fafnir transmission equipment, either new or already in service.

The object of the seal is to provide security for bearings



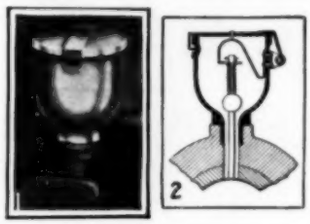
that are located in foundries, cement mills, abrasive plants, and similar locations, where they are more than ordinarily exposed to dust, and where the dust is likely to be heavily charged with abrasive.

— 231 —

Lubricator, "Knorr"

Malcolm H. Smith Co., 50 *Congress St., Boston, Mass.* [Vol.62,p.42.]

The grease cup is intended for application to any stationary bearing requiring



constant and even lubrication. It is made of hard aluminum alloy.

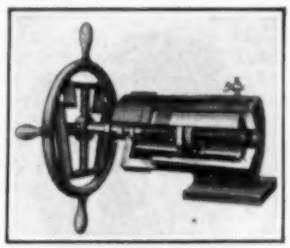
A small brass rod suspended from a flat spring projects through the hole and resting against the rotating shaft promotes a flow of lubricant due to the vibration set up by the rotation. Two sizes, 2 and 3 oz. are fitted respectively with ⅛- and ¼-in. pipe threads.

— 232 —

Lubricating System, Safety

Keystone Lubricating Co., Philadelphia, Pa. [Vol.62,p. 789.]

The principle of the system is to force grease through pipe lines with an adequate pressure and to thus distribute lubrication throughout a given unit. The lubricator is used in connection with a converter cup, so that grease is supplied with a suitable force to any group of bearings. At each bearing inlet a pressure-reduction grease



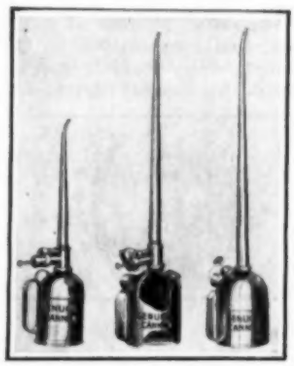
valve allows the necessary lubrication to enter. A booster cup is placed on each bearing, filled from an independent reservoir of grease and automatically discharges according to the bearing's requirements. A strainer is connected into a union attached directly to the lubricator.

— 233 —

Oiler, Combine Pump and Pour

Cannon Oiler Co., Keithsburg, Ill. [Vol.62,p.978.]

The oiler is provided with a separate channel, so that oil can be poured out in a steady stream if desired. The



pour-oiler control is outside of the can so it can be easily operated or adjusted.

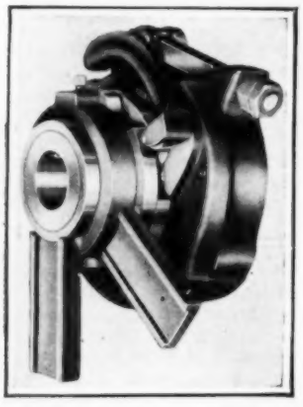
The pump can be operated as a pump oiler when the can is upside down, and the large, straight channel will allow the free passage of heavy oil, even in zero weather. A screen is located in the reservoir so that the oil is strained before it passes out the spout.

— 234 —

Clutches

Conway Clutch Co., 1940 *West Sixth St., Cincinnati, Ohio.* [Vol.62,p.597.]

The company's standard compression clutch previously described on page 674, Vol. 61 of the *American Machinist* has been made available for shop equipment uses direct, in addition to its past application through machine builders.



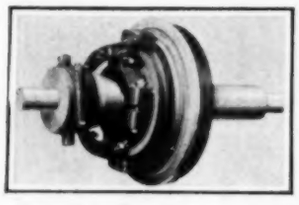
The illustration shows the one-revolution-stop design, one of many special clutch applications which was also previously described on page 713, Vol. 61 of the *American Machinist*.

— 235 —

Friction Clutch, Lemley, Model F

W. A. Jones Foundry & Machine Co., 4404 *West Roosevelt Road, Chicago, Ill.* [Vol. 62,p.754.]

The small number of parts and their accessibility, together with the fact that no special tools are required for



adjustment or disassembly, have been featured in the clutch design. It is applicable for light or medium duty on machines and countershafts.

It is furnished as a sleeve clutch, as a cut-off coupling, or for bolting to the arms of pulleys, sprockets, gears, sheaves and similar power transmission units, being built in various sizes to suit a range of requirements.

— 236 —

Coupling, Free-Floating, "Whitney"

H & O Chain Co., South Norwalk, Conn. [Vol.62,p. 557.]

A coupling formerly made by the Kay Manufacturing Co. is being produced now in sizes ranging from fractional horsepowers to 3,000 hp., based on a rotative speed of 100 r.p.m., in six types. The strength of the original coupling has been increased and the transmitting link has been shortened. Standard, straight bores range from $\frac{7}{8}$ to $11\frac{1}{2}$ in. Special bores and keyways may be specified.

The design permits angu-

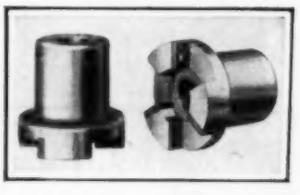
lar displacement of the connecting shafts up to 15 deg. and allows an end-float varying from $\frac{1}{8}$ to $\frac{3}{4}$ in., according to the size of the coupling.

— 237 —

Coupling, Flexible, Insulated

Boston Gear Works Sales Co., Norfolk Downs, Mass. [Vol.62,p.792.]

The design of the coupling, on which a patent has been applied for, follows the principle of a three-jaw clutch



with the working shoulder of each jaw protected by a nonmetallic cushion.

Up to $2\frac{3}{4}$-in. hub diameters the coupling is made in steel only, while above this point cast iron is used. The hubs of the latter range of sizes are left unfinished.

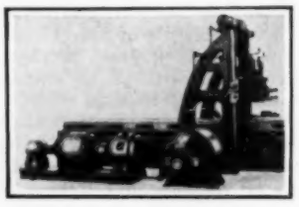
— 238 —

"Super Drive" for Planers

Niles-Bement-Pond Co., 111 *Broadway, New York, N. Y.* [Vol.62,p.755.]

A reversing-motor drive that operates on alternating current from the main line and uses a direct-current adjustable-speed motor to drive the planer is illustrated.

The reversing motor is connected directly to the planer,



the current being furnished by a generator, driven by an alternating-current motor. The planer motor is controlled by manipulating rheostats to vary the field strength of the generator which has a direct effect on the planer motor speed. Cutting and return strokes are controlled independently.

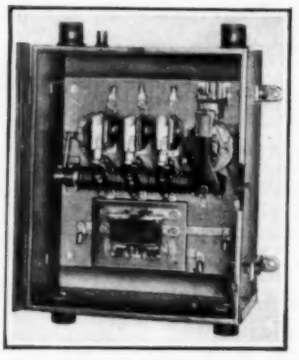
The generator and its driving motor are located on one base and may be positioned to suit, the only connection to the planer motor being by wire.

— 239 —

Starting Equipment, Motor

General Electric Co., Schenectady, N. Y. [Vol.62,p. 407.]

The inclosed magnetic switch is for use with two and three-phase alternating current motors, that can ordinarily be connected directly



on the line. A relay operating from the heat generated on starting affords protection against overload. The switch can be push-button operated.

There are two other types, similar to each other, that are designed for starting synchronous motors. One is intended for full-voltage service, while the other is for starting with the voltage reduced. Both are full-automatic.

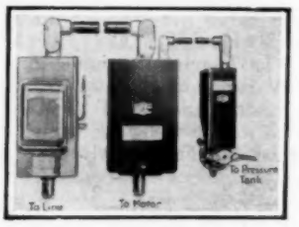
The three designs are designated respectively as CR-7006-D9, CR-7065 and CR-7061 in the company's catalog.

— 240 —

Control, Automatic for Small Pump Motor

Cutler-Hammer Manufacturing Company, Milwaukee, Wis. [Vol.62,p.480.]

A combination motor-control equipment has been made for the automatic operation of small pump motors and consists of three switches mounted together, and each enclosed in an approved manner. One is a line switch for connection to the source. The next is a double-pole mag-



netic switch, which is operated by the third switch of the combination — a switch that is either closed or open depending on a variation of pressure.

The equipment is suitable for application to motors that can be started by throwing them directly across the line.

— 241 —

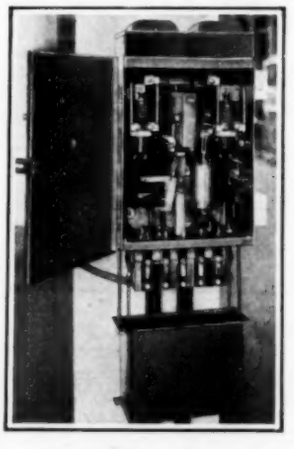
Starter, Automatic, Remote-Control

Crocker-Wheeler Co., Ampere, N. J. [Vol.62,p.560.]

The equipment is intended for starting and running service with two- and three-phase, squirrel-cage, induction motors, and can be located out of the way for push-button control at the machine convenient to the operator.

Such points as making and breaking all contacts under oil, adjustability for both time and load setting, positive time adjustment between starting and running positions and accessibility of wearing parts have been featured as a basis for uninterrupted service.

Safety has been considered by designing a trip mecha-



nism which is operated by opening the door to cut all electrical connections to the contact board, leaving it dead. An interlock between the door and the oil tank prevents the latter from being lowered until the door is opened and the cut-out mechanism tripped.

The starter is being manu-

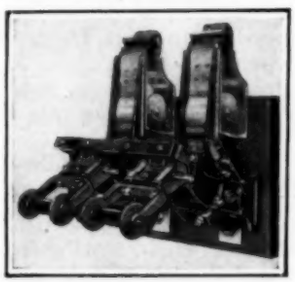
factured for 220-volt, 60-cycle current between 7½ and 30 hp., for 440- and 550-volt, 60 cycle current up to 60 hp., and for motors between 7½ and 30 hp., for 220-, 440- and 550-volt, 25-cycle current.

— 242 —

Breakers, Circuit

Roller-Smith Co., 233 Broadway, New York, N. Y. [Vol.62,p.37.]

The circuit breaker is designed for use on motor and feeder circuits to replace switches and fuses, and is so constructed that the two poles are closed independently



and successively. If an overload exists, the first pole, after having been closed, will open as soon as the second pole is closed. If the overload occurs when both poles are closed, they will open simultaneously. They may be closed again upon relief.

Another circuit breaker is designed for use where excessive mechanical vibration is apt to occur. A shock-proof attachment is included and can be supplied for any of the standard-type circuit breakers built by the company.

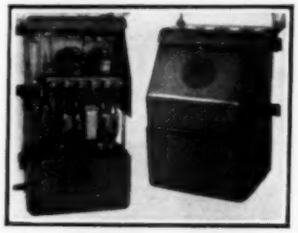
Both breakers are built in seven standard sizes, from 5 to 3,000 amperes capacity.

— 243 —

Switch, Starting, Type ZO

Electric Controller & Manufacturing Co., 2700 East 79th St., Cleveland, Ohio. [Vol.62,p.1018.]

The starting switch is a push-button operated across-



the-line type of starter with oil-immersed contacts for controlling 10-hp. or smaller a.c. motors. It is enclosed in a steel case, with removable top cover so arranged that it may be mounted on the wall. The contacts are of hard drawn copper, operated with a wiping action of two buttons, one marked "start" and one marked "stop." When the "start" button is pressed, the magnet coil is energized and the switch closes. When the "stop" button is pressed, the switch opens and the motor is disconnected from the line.

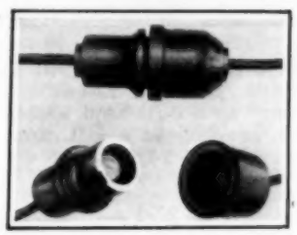
— 244 —

Connectors, Cable, Waterproof, Armored

Ohio Electric & Controller Co., 5900 Maurice Ave., Cleveland, Ohio. [Vol.62,p.905.]

The feature of the connector is that when the cable is soldered and tapped in each end there are no live parts exposed and no tools are required for connecting or disconnecting.

Both halves are held together by a double-bayonet lock so that a turn of 15 deg. is required for disconnecting.



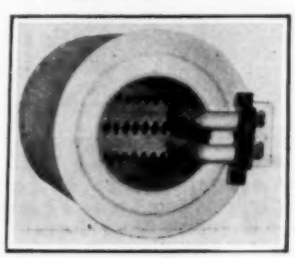
This turn tends to give a positive wipe and keeps the surfaces of both the butt contacts clean. One half of the connector is movable and compressible so that it is free to adjust itself with respect to the fixed contact in the upper half.

— 245 —

Heating Unit, Immersion

General Electric Co., Schenectady, N. Y. [Vol.62,p.711.]

The unit, which consists of a helicoil-sheath wire cast into iron, is designed to be used for the oil-tempering baths and melting pots for lead, tin and alloys that will not attack iron.



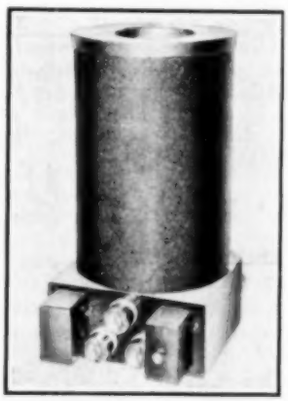
The unit is made in capacities up to 5 kw. and can be obtained either individually or in the form of melting pots and tempering baths complete.

— 246 —

Tank, Calibration, Electrically-Heated

Harold E. Trent, 259 North Lawrence St., Philadelphia, Pa. [Vol.62,p.944.]

The tank is used for the calibration of thermometers, using a copper shell that is



filled with oil up to 600 deg. F. For higher temperatures a steel shell is substituted, using salt as the heating medium.

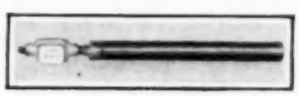
The body of the device is enameled and insulated. The tank and flange can be removed independently of the heating unit, which consists of metal strips connected in pairs and spaced around its outside surfaces. Interconnected switches control two sets of units each. The tanks may be mounted in series and held at a definite temperature by individual thermostats.

— 247 —

Immersion Unit, Electrical

Harold E. Trent, 259 North Lawrence St., Philadelphia, Pa. [Vol.62,p.943.]

The unit has been developed to meet the requirements incident to the melting



of salts, such as lavite. The heating element is of the embedded type, packed in a steel tube to maintain a maximum of heat capacity. The temperature of the unit may be raised to 1,600 deg. F., before the initial heating of the salt takes place.

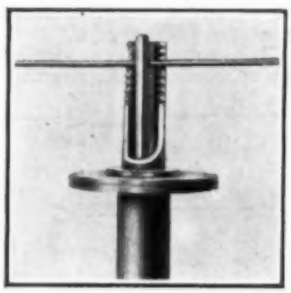
The unit is made in sizes up to 1,500 watts, 18 in. in length with a constant diameter of 1.9 in. The plug connection on the end of the immersion unit can be supplied for special requirements in the case of any particular installation.

— 248 —

Electrode Holder, Arc-Welding

General Electric Co., Schenectady, N. Y. [Vol.62,p.77.]

The simple type of welding-electrode holder consists of a fiber tube with a tinned



brass plug inserted in the end.

A steel string holds the electrode in place against one of a number of notches. The welding table is soldered to the other end of the holder after removing the fiber tube and the fiber guard.

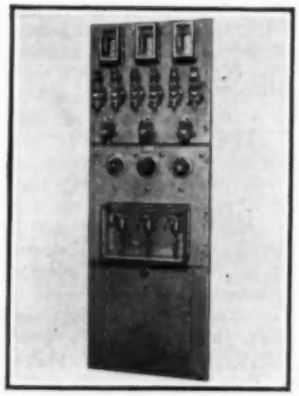
— 249 —

Panel Three-Electrode

General Electric Co., Schenectady, N. Y. [Vol.62,p. 367.]

The panel has been designed for use particularly with small electric furnaces that are employed in making iron alloys, abrasives, carbides, and similar products. The various instruments automatically control the movement of the electrodes and the corresponding action within the furnace.

In addition to the panel



illustrated there is an operator's panel or push-button station that permits of change between hand- and automatic-control on one or more electrodes without interfering with the others.

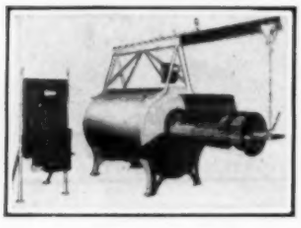
— 250 —

Heat-Treating Furnace, Electric, Improved

Eaton Electric Furnace Co., Taunton, Mass. [Vol. 62,p.980.]

The furnace is an improved type of the company's model R rotary electric heat-treating furnace and is intended for handling work that does not require a temperature in excess of 1,250 deg. F.

The improvements consist of a spool-wound heating unit



that provides greater flexibility, and a container that remains in the furnace and that conserves heat formerly expanded in raising the temperature of cold containers. The container is made of a nickel chromium alloy that resists heat indefinitely. A double temperature control is provided.

The furnace is made in two sizes, one with a container 12 in. in diameter by 18 in. long to contain a charge of 125 lb., and the other with a container 14x36 in. to hold 300 lb. at each charge.

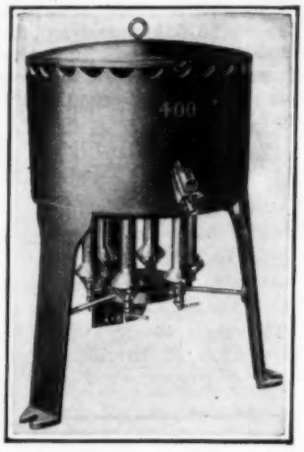
— 251 —

Furnace, Melting, Nos. 20 and 400

Johnson Gas Appliance Co., Cedar Rapids, Iowa. [Vol. 62,p.1018.]

Two additional sizes of melting furnace for lead, babbitt, tin, solder and other medium fusion metals, known as the No. 20, having a capacity of 50 lb., and the No. 400, with a capacity of 600 lb. The smaller size is equipped with a Bunsen burner, shut-off valve, and pilot light. It has a removable cast-iron melting pot 7 in. in diameter by 5 in. deep. It is 18 in. high and weighs 36 pounds.

The larger furnace has six Bunsen burners, each provided with a shut-off valve and pilot light. The cast-



iron pot is also removable and is 16½ in. in diameter by 10 in. deep. The height of the furnace is 31 in., the weight is 345 pounds.

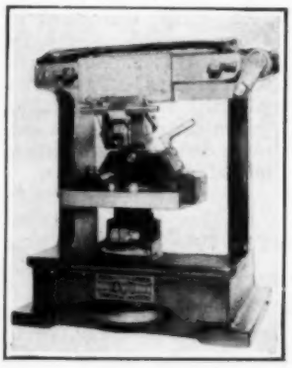
— 252 —

Numbering Machine, Ferrule, Automatic

Noble & Westbrook Manufacturing Co., Hartford, Conn. [Vol.62,p.560.]

The company has perfected a combination of its numbering and marking equipment to make an automatic machine adaptable for marking and consecutive numbering of ferrules and similar small cylindrical parts.

The bench-type, illustrated, consists of a base which supports an overhead frame to



carry the number and letter assembly and into which sets a table for the work. The table is adjustable for height and carries an arbor on which the piece fits that is to be marked. The numbering and marking head is assembled to slide on rollers in the overhead frame and is mounted to be moved over the work at right angles to the axis of rotation. It weighs approximately 60 pounds. The numbering head can be removed from the machine, if desired, and used on a press for flat work.

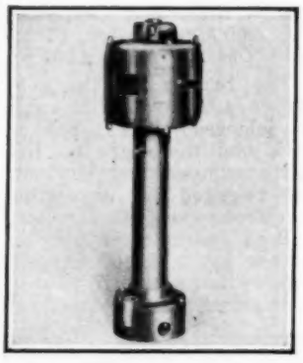
— 253 —

Pumps, Lubricant, Motor-Driver, "Gusher"

Ruthman Machinery Co., Front & Pike Sts., Cincinnati, Ohio. [Vol.62,p.369.]

A revised line of motor-drive lubricant pumps, of which the model U-L-O illustrated is one, is on the market.

The line is designed so there is a model for direct immersion in the oil reservoir and one for installation outside but below the liquid line. The sizes work against varying heads and deliver in



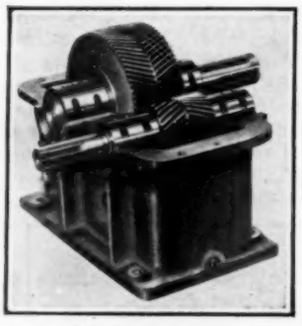
varying amounts, that illustrated having a 12-gal. capacity at a 3-ft. head and 8-gal. capacity at a 9-ft. head through the ¾-in. outlet.

— 254 —

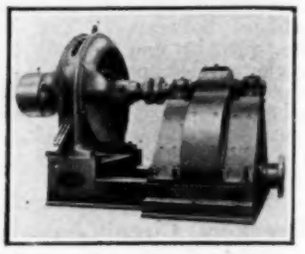
Gears, Reduction, Types "H" and "K"

Poole Engineering & Machine Co., Woodberry Station, Baltimore, Md. [Vol. 62,p.39.]

The Type-H reduction combines a herringbone gear made from a steel forging and a chrome-vanadium pinion which is integral with its shaft. Both are heat treated. The cast-iron babbitt-lined,



removable bearings are supported in split bosses integral with the halves of the totally-inclosing housing. Type-K differs from Type-H in that the pinion is mounted



vertically above the cast-steel gear.

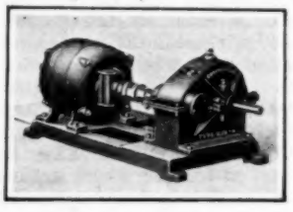
For low speed, lubrication is by the splash system while a pump provides oil under pressure for high speed to bearings and gear teeth.

— 255 —

Speed-Reduction Unit, Type GUH-A

Boston Gear Works Sales Co., Norfolk Downs, Mass. [Vol.62,p.638.]

A series of standardized, combination, speed-reduction units similar to the one illustrated has been designed for obtaining high-speed reductions with a small operating space. It is constructed for mounting on a base and arranged to be driven by a



General Electric motor. Herringbone gears inside the cast-iron housing are lubricated from a reservoir just below them. The drive shaft from the motor is equipped with the Boston flexible, insulated coupling.

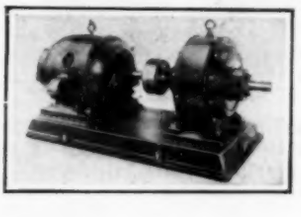
— 256 —

Reducer, Spur-Gear, Ball-Bearing

Albaugh-Dover Manufacturing Co., 2100 Marshall Blvd., Chicago, Ill. [Vol.62, p.675.]

The unit is capable of a wide range of reduction to specification and includes all-ball-bearing design. The housing is oil-tight and arranged to hold lubricant to flood the gears and bearings.

The mechanism is made up



of a series of gears and countershafts, whose arrangement is similar to that of the lathe with its back gears likened to the countershafts.

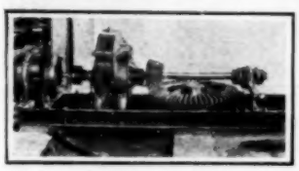
When the reduction required becomes too great for spur gears inside the housing, the countershafts are extended to the outside and internal gears, mounted outside of the casing, are used on the driven shaft.

— 257 —

Speed Transformer Spur-Gear, Industrial Type

Hill Clutch Machine & Foundry Co., Cleveland, Ohio. [Vol.62,p.827.]

The transformer is intended for service with conveyor drives, in steel plants, refineries and industrial works in general. It consists



of a nest of plain spur gears revolving in oil. The gears all have 20 deg. involute-form cut teeth. They are made in seven sizes.

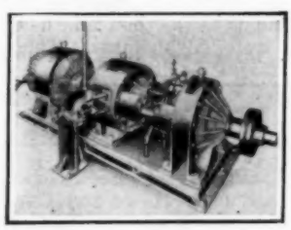
The unit is inclosed, dust and leak proof. Both high- and low-speed shafts are identical in axial alignment and revolve in the same direction.

— 258 —

Speed-Reduction Unit

American Engineering Co., Philadelphia, Pa. [Vol.62,p. 978.]

The device is intended for a variety of machine-tool drives, including presses, broaching machines, planers,



testing machines, cranes, mechanical stokers and similar uses. A Hele-Shaw hydraulic pump and hydraulic motor are used in place of the usual nest of gears. It is possible to obtain various ratios of speed reduction up to 850 to 1 without stopping the direct-connected electric motor.

— 259 —

Speed-Reduction Unit, Type BU3

Boston Gear Works Sales Co., Norfolk Downs, Mass. [Vol.62,p.979.]

The unit is constructed for light drives, from ½ to ¾ hp., depending upon the speed of reduction, such as is used for

display apparatus. It may be mounted on a base with a suitable motor drive.

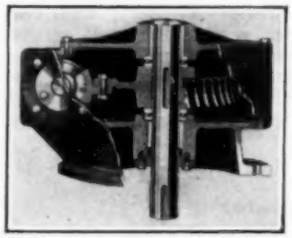
The drive shaft is fitted with a 1½ in. diameter grooved pulley suitable for a ⅜-in. round belt. The drive shaft has a similar pulley 3 in. in diameter. The double projections of driving and driven shafts provide opportunity for additional connections. The height of the worm shaft from the base is 2 in. and the center distance of the driver and driven shaft is 1.333 in. An oil reservoir provides proper lubrication of the gears.

— 260 —

Speed Reducers, Worm-Gear, Vertical

Foote Bros. Gear & Machine Co., 215 North Curtis St., Chicago, Ill. [Vol.62,p.981.]

The construction of the reducer is similar to the standard type made by the company. It is designed to be set on its side with the driving shaft to the right, the wormgear revolving in a



horizontal plane and the slow-speed shaft in a vertical position.

The base is cast integral with the case to provide mounting either on the floor or from the ceiling. The worm, made of an alloy steel, has large ball-thrust bearings at both ends. The wormgear can be furnished either of semi-steel or bronze with cast-iron centers as desired. The wormgear shaft rotates in special phosphor bearings and the ball-thrust bearings are provided at each end. It is made in a variety of sizes and capacities from fractional to 100 hp. and from 7 to 1 up to 120 to 1 ratios.

— 261 —

Speed-Reduction Unit, Double-Wormgear

Foote Bros. Gear & Machine Co., 215 North Curtis St., Chicago, Ill. [Vol.62,p.1017.]

A speed-reduction mechanism for high ratios of the double-wormgear type, the unit consists of two wormgears mounted together in a single inclosed oil- and dust-proof case. The wormgears

are made of semi-steel or bronze as desired, and the worms are cut from alloy steel.

The unit illustrated has a reduction ratio of 3,600 to 1, the motor is of the variable speed type, running from 1,200 to 1,800 r.p.m. These units are also made in a variety of sizes nad ratios ranging as high as 14,400 to 1. Higher ratios may be secured by a combination of the worm and the spur-gear speed reducers.

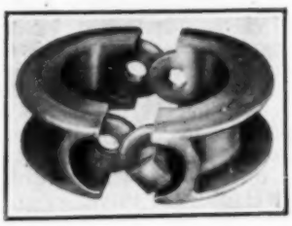
— 262 —

Collar, Safety, Malleable Iron, "Split-Type"

Link-Belt Co., Indianapolis, Ind. [Vol.62,p.42.]

The split-type collar makes installation simple on existing shafting and in the centers of long lengths.

When in position the set screws hold the halves to-



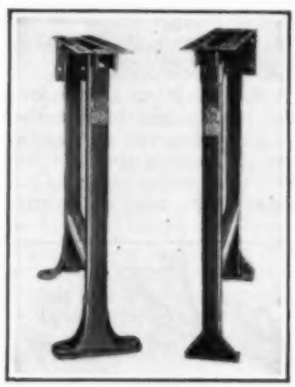
gether and when they are screwed down against the shaft their heads are protected by the flanges on the collar.

— 263 —

Bench Leg, Pressed-Steel

New Britain Machine Co., New Britain, Conn. [Vol.62, p. 976.]

The leg is built up of formed sections, electrically welded together. There are three styles, for light duty,



for general purpose and for heavy-duty service. The U-shaped section of the leg, with the U's facing each other, assists in securing the under shelving. The feet are shaped to give ample stiffness. The backboard bracket leaves sufficient room below for a line of pipe against the wall. The finished bench may be moved to any desired location, either in sections or as a unit.

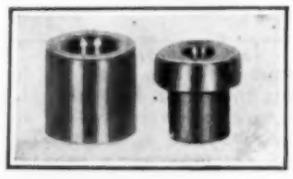
The width varies to suit requirements, while the height is standard at 31¼ inches. The weights range from 9¼ to 22½ pounds.

— 264 —

Bushings, Drill-Jig, Standard

Ex-Cell-O Tool & Manufacturing Co., 1409 East Grand Blvd., Detroit, Mich. [Vol.62,p.754.]

Two additions, as illustrated, have been made to the company's line of standard bushings. One, a plain



headless design, is carried to stock in all numbers, letters and fractional drill sizes. The

other, which is made with a head, is otherwise similar to the headless design as pertains to the range of sizes and grouped outer diameters, with allowance for fit and choice of lengths.

Both styles are made of high-grade tool steel, are heat-treated to file hardness and are held to limits of minus 0.000 plus 0.0003 in. in the bushing holes, with 0.020 in. allowed on the outside, for grinding.

— 265 —

Repair Forge No. 236

Buffalo Forge Co., Buffalo, N. Y. [Vol.62,p.597.]

A forge having a one-piece steel hearth has been added to the company's regular line. It is designated as No. 236 of a series and is intended for use on repair

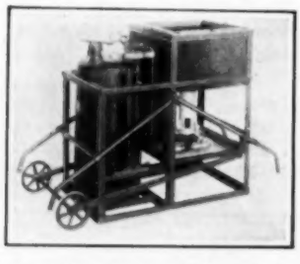
work. The hearth is approximately 6 in. in depth by 24 in. square and is built with a wide flange around the edge to withstand the usually severe service to which repair equipment is subjected. It weighs 180 pounds.

— 266 —

Furnace, Portable

Chausse Oil Burner Co., Elkhart, Ind. [Vol.62,p.902.]

The furnace has been designed for use in melting lead, babbitt, cyanide and other similar material. The



frame is 20 in. wide, 36 in. long and 33 in. high, and the heating chamber is 14 in. square by 16 in. high. The kerosene tank has a capacity of 12 gal. while the burners consume 1 gal. of fuel per hour. The maximum temperature generated is 1,800 deg. F. Pressure on the tank is maintained between 10 and 20 lb. by a hand pump.

The wheels are arranged to allow the machine to set solidly while in use, or to be readily transported.

— 267 —

Brazing Compound, L. P

Metal & Thermit Corporation, 120 Broadway, New York, N. Y. [Vol.62,p.674.]

The compound is designed for use in brazing operations on cast iron, functioning to protect the cast iron from oxidization at and around the joints while the iron is being heated and prepared for the brazing operation; the cast-iron parts having been previously thoroughly cleaned.

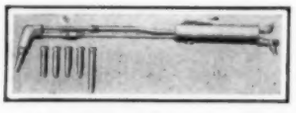
It is said that its use obviates the necessity of chamfering or otherwise preparing the parts for brazing. It is further claimed to result in an easily machined joint.

— 268 —

Torch, Cutting and Welding, Low-Pressure

Alexander Milburn Co., 1416 West Baltimore St., Baltimore, Md.. [Vol.62,p. 905.]

The torch is made of bronze forgings and seamless tubing and the tips are made of solid copper, interchangeable with a number of low-pressure torches of other



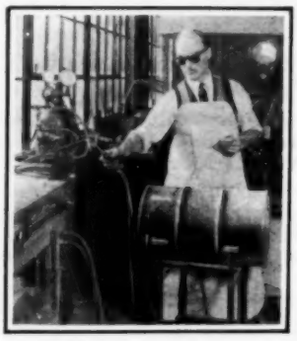
makes. It will operate on either high or low-pressure gas with equal efficiency, and is suitable for operating with acetylene gas, city gas or hydrogen. Welding can be accomplished, as well as cutting, by the application of suitable tips.

— 269 —

Gasaver

Weldit Acetylene Co., Detroit, Mich. [Vol.62,p.865.]

The Gasaver is a device for automatically shutting off the supply of oxygen and acetylene when the welding torch is not in use. The principle involves two shut-off valves, controlled by a hanger arm on which the torch is hung. The flame is adjusted so that when the torch is not in use it may be hung by the projecting arm and extinguished due to the torch depressing the arm and closing the valve.



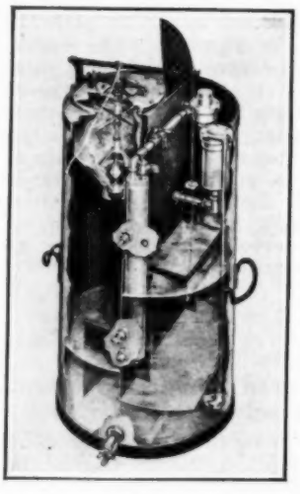
Upon lifting the torch and passing it over a convenient pilot light, it is lighted to the same set flame as originally adjusted. The device is further protected against danger of flash back.

— 270 —

Generator, Acetylene, Low-Pressure, Portable

Oxweld Acetylene Co., 30 East 42nd St., New York, N. Y. [Vol.62,p.981.]

The generator takes 35 lb. of carbide at one time and can be transported readily



from place to place, thus providing a portable supply of generated gas. The weight of the generator empty is 210 pounds.

Because of its low center of gravity, the generator rights itself when tilted to an angle of 30 deg., and can work satisfactorily at an inclination of upwards of 10 deg. No adverse effects result if, while in operation, it is accidentally knocked over.

— 271 —

Locator

Hermas Machine Co., Inc., Hawthorn, N. J. [Vol.62,p. 182.]

Patent and manufacturing rights to the locator have been purchased by the Hermas Machine Co., Incorporated.

The "Locator" is used for laying out, drilling and boring small and medium-size jigs and was originally manufactured by the National Tool Engineering Co. of Cincinnati, Ohio, and was previously described in the *American Machinist*, Vol. 61, p. 1018.

— 272 —

Separator, Chip

F. C. Sanford Manufacturing Co., 2060 Fairfield Ave., Bridgeport, Conn. [Vol.62,p. 182.]

The equipment is intended for use in connection with an oil separator to separate the

product from the chips after removal of the oil. The connecting rod is detachable, to facilitate the dumping of chips from the box.

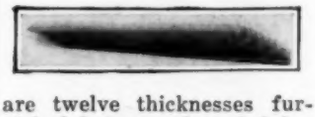
The shaker box is 24x24x6 in. Three screens are furnished, having meshes of $\frac{1}{4}$, $\frac{1}{2}$ and $\frac{3}{4}$ in. respectively, which may be used separately or in combination. Room is provided underneath for a container to catch the screened chips.

— 273 —

Stock, Flat, Ground

Brown & Sharpe Manufacturing Co., Providence, R. I. [Vol.62,p.863.]

Several additional sizes have been added to the company's line of ground flat stock, which is made of tool steel, uniformly annealed and ground to a thousandth of an inch in thickness. There



are twelve thicknesses furnished between $\frac{1}{64}$ and $\frac{3}{8}$ in., all being made in various widths and 18 in. in length. Square sizes are also obtainable in six sizes up to 1 in. square.

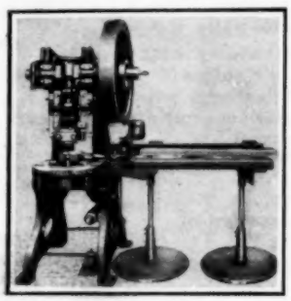
The stock is adapted to making punches, templates, machine parts, gages, test tools and special parts requiring an accurate thickness.

— 274 —

Stock Table and Oiler, Combination

F. J. Littell Machine Co., 4125-2-T *Ravenswood Avenue, Chicago, Ill.* [Vol.62, p.517.]

The self-contained equipment is designed for adaption to any press, vertical or inclinable, as it can itself be



inclined and is provided with heavy bases that form an independent support. These bases have sufficient weight so that it is unnecessary to bolt them to the floor.

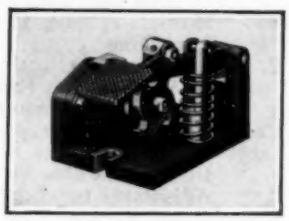
The oiling attachment consists of a pair of rolls and an oil container that feeds in regulated amounts and retrieves the excess oil. The stock is coated on both sides.

— 275 —

Valve, Pneumatic, Foot-Actuated, "Logan"

Logansport Machine Co., Logansport, Ind. [Vol.62, p. 366.]

The valve is being made for use in connection with the arbor press and other Logan air-operated equipment and is also available



for the market to meet the general need for such a valve. Its use relieves both of the operator's hands to enable him to perform his work to the best advantage.

Depressing the pedal which is spring operated causes the valve stem to rotate and open the ports for a certain action. Releasing the pedal and again depressing it brings the valve to the equivalent of its initial setting.

— 276 —

Pencils, Colored, Thin-Lead, "Unique"

American Lead Pencil Co., 220 *Fifth Ave., New York, N. Y.* [Vol.62,p.444.]

A line of lead pencils of various colors has been developed as an improvement over the present thick, soft leads, for drafting, checking, estimating and other uses.

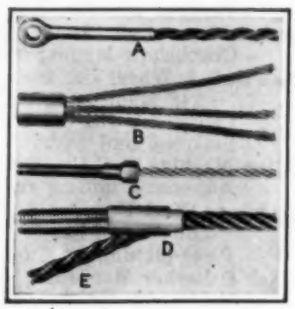
The pencil is being furnished in four colors, blue, red, green and yellow and is said to have strength in the small diameter lead comparable to that in the ordinary pencil. Samples are being distributed by the company.

— 277 —

Wire Rope, Tru-Lay and Fittings, Tru-Loc

American Cable Co., 105 *Hudson St., New York, N. Y.* [Vol.62,p.559.]

The principal feature in the design of the rope lies in preforming the wires and strands to the shapes they will take in the completed rope. This design causes outer broken wires to lie flat, and resists unstranding which makes it possible to cut and splice at any point without the necessity of seizing the ends. It also results in an even distribution of the load to individual strands and



wires and makes it possible to use the Lang lay rope in place of regular lay.

The Tru-loc fitting consists of a steel sleeve which is slipped over the smooth undersized end of the rope and then put in a specially designed press and forced to contract around the rope and into the recesses between wires and strands so all are gripped securely. It can be threaded, equipped with various heads for wrenches, or fitted with eyes or hooks or turnbuckles.

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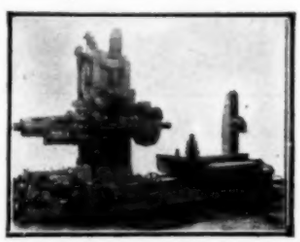
Boring and Turning Machines

—1—

Boring, Facing and Milling Machine, Horizontal

Armstrong, Whitworth & Co., Ltd., Openshaw, Manchester, England. [Vol.61,p. 203E.]

The boring machine will face diameters up to 54 in., the traverse of the drilling spindle is 30 in., the main table is 88 in. long by 48 in. wide, and both the longitudinal and cross traverses are 72 in. The drilling spindle is 6 in. in diameter, has 24 speeds, and the maximum distance of the spindle above the revolving table is 48 in. The spindle slide is balanced,



the balance being carried well back to prevent sag at the end of the slide.

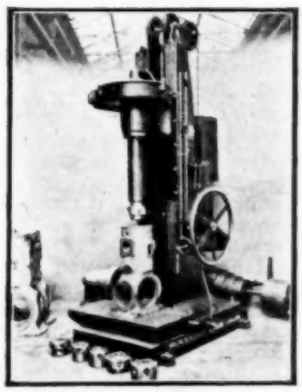
The spindle sleeve carries the facing slide and the spindle and its sleeve are driven by cut-helical bevel and spur gears, and are carried in adjustable gun-metal bearings. Reverse motion is provided for tapping. Four self-acting feeds are available for boring and drilling, and eight reversible feeds for milling in the vertical direction. Both spindle and spindle sleeve have ball washers to take end thrust. The table has eight longitudinal and cross-traverse feeds, with hand and power motion in all directions. A screw-cutting attachment is available.

—2—

Boring Machine, Vertical-Snout

J. Holroyd & Co., Ltd., Milnrow, near Rockdale, England. [Vol.61,p.181E.]

The machine has been specially designed for boring cylinders of oil engines and for work of similar character. It will bore holes from 6 to 8 in. in diameter by 22 in. in length, the maximum diameter of work admitted being 16 in. and the maximum traverse of the snout 39 in. The baseplate has a working surface 3x2 ft. The maximum distance from the spindle nose to the baseplate is 4 ft., the machine occupying a floor



space 6 ft. square and weighing 71 cwt. The snout itself is fastened to the head by a large spigot and is 5¼ in. in diameter. The spindle is of steel 3 in. in diameter with a conical brass bearing at the cutter end arranged for wear adjustment. The double-thrust bearing permits cutting to be effected in either direction.

The boring cutter revolves and feeds down for the roughing operation, moving upwards for finishing, the sequence of operations being —rough-bore cylinder, feeding down; change cutter; finish bore, feeding up; change cutter; recess and chamfer top.

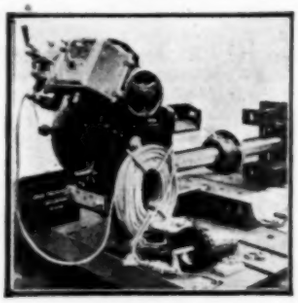
There are four cutter speeds and three feeds, ranging respectively from 10 to 25.6 revolutions per min. and from 0.036 to 0.094 in. per revolution.

—3—

Boring Machine, Portable, Locomotive-Cylinder

J. Holroyd & Co., Ltd., Milnrow, near Rochdale, England. [Vol.62,p.220E.]

The machine is self-contained and is designed for reboring the cylinders of locomotives, its range being from 11 to 17½ in. in diameter, with a maximum length of 28 inches.



The steel boring bar, 4½ in. in diameter, is driven by a 1½ hp. constant-speed motor through spur and wormgearing, the speed of the boring bar being 10 revolutions per minute. The worm gear is inclosed in a box which serves as a base for the motor and switch gear. Feeds, actuated by a screw, range from ¼ to ½ in., being added by a star wheel operating against stop pegs, variations being obtained according to the number of stops used. The end brackets are slotted to receive extension pieces, which are clamped to the cylinder faces.

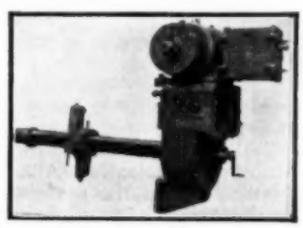
A similar machine, differing only as regards dimensions, has been made by the firm for reboring the liners of locomotives. In this case, the maximum and minimum diameters bored are 10½ and 6 in. respectively, the maximum length being 48 in. The boring bar is 3 in. in diameter and is driven at 14 revolutions per minute.

—4—

Boring Machine, Cylinder, Portable, Electrically-Driven

Beyer, Peacock & Co., Ltd., Gorton, Manchester, England. [Vol.62,p.11E.]

The machine is driven by a 1-hp. constant-speed motor, which is mounted with its starter on the machine frame. It bores locomotive cylinders in position on the frame and



will deal with cylinders ranging from 16 to 24 in. in diameter by 28 in. stroke.

A mild steel bar 4½ in. in diameter carries the boring head and is mounted in bearings in the main frame. This frame is designed as an oil-tight gearbox with a two-speed gear for driving the main wormwheel, which is mounted on the bar. The latter can be started, stopped and changed in speed without stopping the motor. The wormwheel driving the feed screw is driven from the bar and provides feed at one rate.

Two boring heads and sets of tools, a pair of sample adaptors for bolting to the cylinder - cover face, and sample bush for stuffing box, together with the necessary accessories, are provided.

—5—

Boring Machine, Locomotive-Cylinder

Armstrong, Whitworth & Co., Ltd., Openshaw, Manchester, England. [Vol.61,p. 203E.]

The machine is especially arranged for setting cylinders quickly, the sliding table being traversed by power to run them off the bars. The stays travel with the table. The bars are of large diameter to enable the facing to

be done with a broad tool inserted in each boring head. These heads are of steel, bolted to a cast-iron sleeve with a brass bush at the front and have felt wipers to prevent dust and grit scoring the bars.

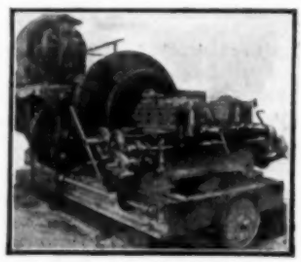
There are three forward feeds, with a reverse for bell-mouthing. The maximum distance between the main bars is 102 in. and the minimum 27 in. The maximum distance vertically between the main bars and the valve-boring bars is 32 in. and the minimum 13 in. Cylinders having the valves at an angle with the barrel can be bored.

—6—

Tire-Boring Machine

Armstrong, Whitworth & Co., Ltd., Openshaw, Manchester, England. [Vol.61,p. 203E.]

The machine has a headstock with a simple train of gears adapted to steady running. The faceplates are fitted with four jaws specially adapted for the chucking, clips being provided to hold the tire while setting. A five - jaw self - centering



chuck can be provided if desired. The cross-beds can be traversed along the bottom bed by power to get the tires in and out of the machine. The rests have large rams which carry the various boring and back recessing tools. The front rest is used for roughing and the back rest for finishing. Automatic knock-off stops and setting stops are provided for each operation, and safety clutches are on each feed shaft as a further safeguard. The cutting lubricant floods the work under pressure from a large plunger pump. There is a reverse feed for bell-mouthing.

Drilling Machines

—7—

Drill, Vertical, 42-Inch

Kitchen & Wade, Halifax, England. [Vol.62,p.72E.]

In the improved 42-in. vertical drilling, boring, tapping and studding machine convenience and ease of control have been specially studied, each motion being operated easily from the working position. The baseplate is arranged so that lubricant will drain back from the tee slots to a double sump in the part of the baseplate under the pillar. Special attention has been given to the elevating and swingaside features of the table, which can be vertically adjusted a distance of 1 ft. 8 inches.

At the drilling head the driving wheels at the top of the spindle are mounted on a

steel sleeve in double bearings. The gear box, which is embodied in the head, is grease-tight. It gives four speeds through hard steel sliding gears of the motor-car type, running in thick mineral grease. Changes are effected by a single lever. A ball thrust washer backs up the spindle, which runs in a hard steel sleeve. The spindle can be started, stopped or reversed by means of a positive clutch mechanism on the head. There is a quick reverse motion for tapping.

All the driving gears are heat-treated, all the driving shafts and feed shafts are of high-carbon steel, all driving shafts run in bronze-bushed bearings and all levers are of malleable iron. The overall floor space is 5 ft. 3 in. by 3 ft. and the approximate net weight is 55 cwt.

—8—

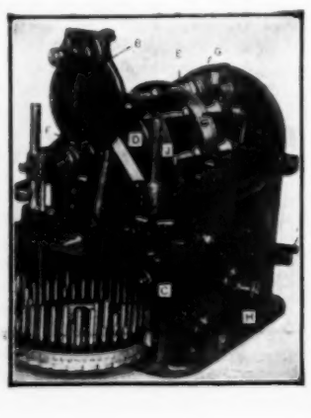
Drill, Multiple, Automatic for Clock-Making Trades

Schaublin-Villeneuve, Malleray, Switzerland. [Vol.62,p. 110E.]

The automatic machine is intended for drilling a number of holes simultaneously in disks and similar pieces needed in the watch, clock and instrument trades. The maximum diameter of the work taken is approximately 1¾ in., the maximum diameter on which the holes can be arranged being 1⅛ in., and the maximum diameter of the holes themselves approximately $\frac{1}{16}$ inch.

The maximum number of holes that can be thus drilled in a given piece is 50, arranged on eight diameters.

In operating the machine, the workman places the piece to be drilled in position, presses on a lever to start the machine, and when the holes are drilled the machine stops automatically. A template fixed on the plate sets the drills for position, and the travel is controlled by



disks. In the interior of the machine two rods allow for the regulation of the movements, according to the sizes of the pieces under treatment. The machine stops automatically if the drills become worn or slip.

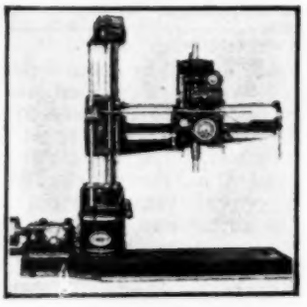
—9—

Drill, Radial, 7-Foot

C. Swift & Sons, Ltd., Halifax, England. [Vol.61,p. 184E.]

The machine is designed for radial drilling, boring, facing, tapping and studding, and includes a number of features in its design.

A fine radius motion, operated by a handwheel and wormgear, on the left-hand side of the saddle, to a pinion



and spur gear on the column, is so arranged that it can be readily thrown out of mesh when it is not in use. A trip has been fitted to the arm-elevating motion, and a safety device makes it impossible to put this motion into gear while the arm is locked on the column. The column carrying the radial arm is mounted on a stationary pillar and revolves on roller and ball bearings. The pillar, which is 1 ft. 9 in. in diameter on the bottom column bearing, is ground where the column fits, and the column is ground both externally and internally on all the bearing surfaces.

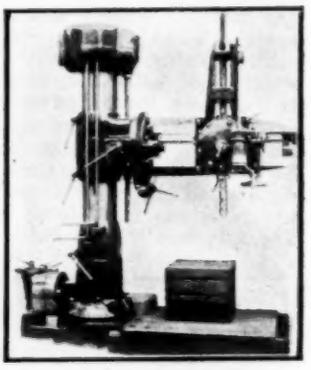
The spring-balanced spindle, 3 in. in the driving part, is of high-carbon steel, ground to fit in a long sleeve. It has ball thrust washers at both ends and is bored to No. 4 Morse taper. Both hand and power feeds are provided for quick advance and return, and reverse motion for tapping. The floor space occupied is 13 ft. 6 in. by 4 ft. 2 in. and the approximate weight is 7½ tons.

—10—

Drill, Radial, Universal, 5-Foot

Scott Bros., Ltd., Halifax, England [Vol.62,p.46E.]

The machine, which can also be used for tapping, has a minimum radius of 2 ft., 9 in. and will drill holes up to 3 in. in diameter from the solid metal. Both the radial arm and drilling head are made to swivel through a complete circle by means of wormgears. The speed-gear box is placed at the top of the pillar instead of at the base, and provides 9 speeds which are controlled by two handles located conveniently. The drive from the pulley



shaft is by means of bevel gears to a vertical shaft and then through another pair of bevels on to the gear-box shaft. The arm is of double tubular section, with open back and connected at the ends. The elevating motion is driven from the vertical down shaft through a friction and reverse arrangement to a phosphor bronze nut on a stationary screw. The drive to the saddle is through spiral gears (of bronze and hardened steel), mounted in a separate grease-tight compartment. The thrust is taken on ball bearings.

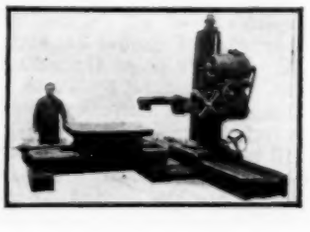
The saddle is racked on the arm through wormgears and the weight is taken on ball journals. The weight of the arm is taken on ball thrust washers and roller journal bearings at the top of the pillar. The machine weighs approximately 5¼ tons.

—11—

Drilling and Countersinking Machine, Horizontal, Special

W. Asquith, Ltd., Halifax, England. [Vol.62,p.31E.]

The outstanding feature of the machine is the countersinking arrangement; other-



wise it is built on standard lines and is arranged for dealing with work that has to be drilled through and countersunk on the inside, such as tube plates for marine boilers. Each hole is drilled by the forward motion of the spindle and is countersunk on the return motion without any resetting.

The countersinking tool is carried in an overhanging bracket, so that when the drill is withdrawn and the spindle traversed back by hand, the countersink is brought into position at the other side of the hole. A 5-hp. motor mounted on the head is used for driving the high-carbon steel spindle, and for actuating the power speed.

The work table has a rotary motion indexed for fine adjustment, as well as longitudinal traverse of 3 ft. to and from the column, these motions being operated by hand. The floor space occupied is 15x14 ft. and the machine weights approximately 6½ tons.

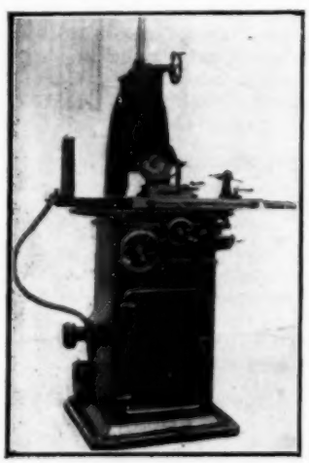
Grinding Machines

— 12 —

Grinder, Surface

Pollock & Macnab, Ltd., Bredbury, near Stockport, England. [Vol.61,p.166E.]

The surface-grinding machine will deal with flat surfaces up to 18 in. long by 6 in. wide by 9½ in. in height.



The table is 46 in. long by 8 in. wide overall, with a working surface 18x6 in., the three tee-slots being ½ in. wide each. The table is guided by V and flat surfaces and is driven by a rack, the reverse being obtained from bevel gears. The feed ranges from 0.02 to 0.08 in. per stroke.

The wheel-spindle slide has a vertical adjustment of 9½ in., obtained by a handwheel operating a screw through bevel gears. The spindle is 0.4 carbon steel, running in parallel phosphor - bronze bearings which are conical outside for lengthwise adjustment, and have provision for end thrust. The wheel is 7 in. in diameter by ½ in. wide. A centrifugal pump provides coolant to the head. The weight of the machine is 11 cwt.

— 13 —

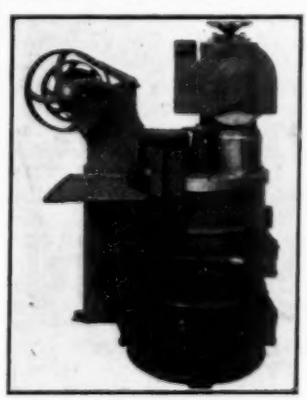
Grinding Machine, Piston-Ring, Automatic

Harry F. Atkins, 1, Foster Buildings, Sheffield, England. [Vol.61,p.202E.]

The machine, when fitted with 8-in. diameter Humphreys magnetic chucks, has a capacity range for 4-in. to 6-in. diameter rings, 0.002 in. of metal being removed, and parallelism being guaranteed within 0.0005 inches.

The machine is self-contained, the driving belt from the main shaft or motor being taken by a fast-and-loose pulley on a shaft, from one side of which the machine is driven, while from the other is driven the grinding wheel, which is 12 in. in diameter by 2-in. face. The wheel is mounted on a precision spindle with adjustable phosphor bearings in a taper housing.

There are two chucks mounted at 180 deg. on the



revolving table, which themselves revolve on their own axes. A combination of fast and slow motion with full stop and reverse is so arranged that automatically the ring is passed below the grinding wheels three times in succession, and the time of rotating the complete table to bring the next ring to working position is held to a minimum. While one chuck is in working position, the other one is being unloaded, cleaned and loaded. The machine weighs 16 cwt. and has an output capacity of 600 rings per hour.

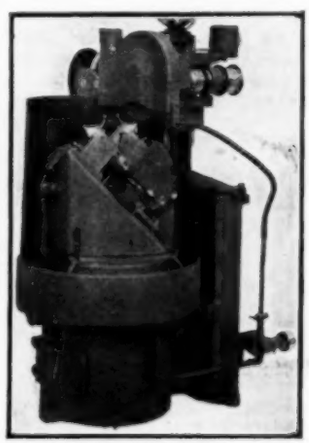
— 14 —

Grinding Machine, Automatic, for Spindle Points

Harry F. Atkins, 1, Foster Buildings, Sheffield, England. [Vol.62,p.120E.]

The machine is designed for automatically grinding the points of small spindles up to 15 in. in length, with an hourly output of approximately three gross of spindles.

It is self-contained and weighs approximately 18 cwt., and carries a 12-in. diameter



grinding wheel. The self-contained countershaft runs on ball bearings at 500 revolutions per minute.

From this countershaft, are driven the grinding spindle, the reciprocating mechanism for the wheelhead, the work-actuating mechanism and the pump. The grinding wheel continually reciprocates to and fro the full extent of its width, which gives freer grinding and keeps the wheel true. A pair of collet heads are provided to hold the work, disposed at the desired angle for the point.

The two collet heads are mounted on a turntable which has two speeds, a high speed to bring the work to the grinding wheel and a low speed used while the actual grinding takes place.

As soon as the point is ground, the high speed automatically takes control and quickly brings the second collet head into the grinding zone, at the same time bringing the ground spindle to the operator.

— 15 —

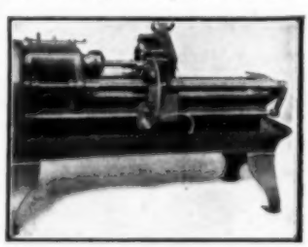
Grinding Machines, Thread, External and Internal

Maison Cornélis, Liége, Belgium. [Vol.62,p.103E.]

To supplement the work done on the company's automatic screw-cutting machine and for cases where a further degree of precision is necessary, another machine has been introduced which will grind threads, hardened or otherwise, and which can be used for cutting internal threads.

The work is given a motion of rotation by a pulley and a longitudinal movement by means of a master thread secured direct to the same spindle with a half nut. The cutting tool, whether a single-point tool for internal threads or a grinding wheel, has no longitudinal sliding movement, and in the case of the grinding wheel is rotated by a separate belt. Automatic reverse to the workspindle is given by gearing.

The grinding wheel is trued to the form required and is



usually of 8-in. diameter, running at 2,800 r.p.m. It is fed into the work as in nut-cutting and, as suggested, has a movement of rotation only. The capacity of the machine is from ½ to 5 in. in diameter and the bed may be supplied in three lengths up to a maximum of approximately 35½ inches.

Lathes

— 16 —

Lathe, Center

Pollock & Macnab, Ltd., Bredbury, near Stockport, England. [Vol.61,p.166E.]

The lathe is intended for garage and general-utility purposes and is built in two sizes, 5½-in. and 6½-in. height of centers.

On a 78-in. bed the lathe

admits 43½ in. between centers. Six spindle speeds range from 13.6 to 267 revolutions per minute.

Adjustable phosphor-bronze bearings are provided, the

front bearing being 2½x3½ in. End thrust is taken by a ball thrust washer. A reverse motion for right- and left-hand threads is housed in the headstock.

— 17 —

Lathe, Center, 6¼-Inch

Smith, Barker & Willson, Ltd., Halifax, England. [Vol. 62,p.94E.]

The lathe is suitable for toolrooms, motor garages, repair shops and small work shops.

It admits work 38½ in. in length between centers, swings 23 in. in diameter in the gap, 10 in. wide in front of the faceplate, 12⅝ in. in diameter over the bed and 8½ in. in diameter over the carriage.

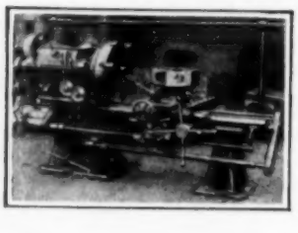
Cast in one piece with the suds tray, the 6-ft. bed has raised V-guides, its depth being 12¾ in. The steel spindle, which has a 1⅞ in. hole completely through it, runs in parallel adjustable bearings. The end thrust of the spindle is taken on a ball-thrust washer. Feeds are operated by means of a drop worm, which runs in oil. The lathe weighs 12 cwt.

— 18 —

Lathe, Surfacing and Boring, 24-in. Swing

Dean, Smith & Grace, Ltd., Keighley, England. [Vol.62, p.109E.]

The chief feature in the 24-in. lathe lies in the all-geared head. This head has an external gear bolted direct to the back of the four-jawed chuck. The gear is driven by a sliding pinion, solid with



the shaft, and controlled by the lever on the headstock, the lever in turn being interlocked with a central lever which operates the friction clutch on the spindle for controlling the other speeds.

The hexagon turret has an improved locking motion, which draws the turret down on its seat by a handle located at the front. A rear handle locks the turret slide in position, while a third on the left controls the locking bolt.

End thrust is taken on a standard ball bearing. The sliding and surfacing feeds are operated by means of one handle, and cannot be in operation simultaneously. The gear box gives four positive feeds. A feed reverse, located in this box, can be operated while the gears are running. Feed is transmitted through a slip coupling. The gears inside the box are of steel, heat-treated, and run in oil. From 5 to 7 hp. is required for the drive. The machine weighs approximately 2¼ tons.

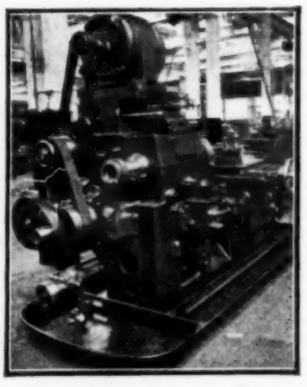
— 19 —

Auto-Lathe, No. 5

Alfred Herbert, Ltd., Coventry, England. [Vol.62,p. 101E.]

The lathe, which was initially introduced some time ago, has recently been redesigned to some extent, but in a large measure, the features are, of course, retained.

The driving pulley on the headstock has been covered



by an adjustable belt guard. The lever projecting toward the front on the top of the headstock controls a friction clutch in the driving pulley, by which the lathe can be started and stopped by hand. When the clutch is disengaged, nothing on the lathe is running except the pulley. A bracket is bolted to the top of the headstock. It carries a bar that projects over the chuck toward the turret. Pilot bushes on the toolholder slide along this bar. The bracket forms a support for the chuck guards, which are used on lathes with oil supply to prevent the lubricant being thrown about.

The front and back cross slides are independently adjustable along the bed and can be set to work either simultaneously or separately, and can thus take roughing and finish facing cuts at the same time. Each is moved by a cam. Variable stroke to the cross slide is available. Each slide has a double toolholder, the post having universal adjustment, the T-slots and the slides running at right angles to the spindle and the toolposts having slots for the bolts at right angles to those in the slide. A worm is used for the feed, and a spiral gear for the idle motion.

— 20 —

Lathe, Re-Turning Railway Wheels

Dean, Smith & Grace, Ltd., Keighley, England. [Vol.61, p.160E.]

The special belt-driven lathe is intended solely for re-turning 2 ft., 9½ in. diameter railway carriage and wagon wheels in pairs on

their axles, and has capacities for axles up to 6 ft. 7 in. long. A main drive is geared on the periphery of the two faceplates, and an auxiliary drive is included for moving the loose headstock on the bed by means of a screw driven through worm and wormwheel reduction gears.

The front neck of the spindle is 14 in. in diameter by 12 in. long, while the rear neck is 7 x 7 in. The axles, with wheels mounted, are centered by rams having conical holes to take their ends. The wheels are driven by wedges, which grip the sides of the rims when the loose head is moved inwards.

There are two spindle speeds of 1.4 revolutions and 3.4 revolutions per min., respectively, through gear ratios of 250 and 100 to 1. The feeds range from ⅛ to ⅜ inch.

The floor space occupied is 18 x 6 ft., 25 hp. is required for driving and the weight of the machine complete is 13 tons.

— 21 —

Lathe, Crankpin, Duplex, Automatic

J. Holroyd & Co., Ltd., Milnrow, near Rochdale, England. [Vol.61,p.153E.]

The special lathe, with 11-in. height of centers, is designed for turning the inner and outer pins of automobile crankshafts before grinding.

The work is secured in a special chuck and revolved, the cutting tools being stationary. There are four

heads mounted on two beds, with the driving pulleys between. When one side of the machine is running, the other side is in process of loading. The outer crankshaft pins are turned in one part and the inner crankpins are turned in the other, the lengths of cranks admitted being just over 25 in. The spindles are of steel, 4 in. in diameter, totally inclosed and running in adjustable parallel capped bearings at 120 revolutions a minute.

The cross slides carrying the toolholders are operated by a cam motion from a feed-shaft. On each slide are four toolholders, two at the front for finishing and two at the back for roughing cut. The power required is 20 hp., the floor space occupied is 19 x 5 ft. 6 in., and the net weight is approximately 5 tons.

—22 —

Lathe, Center, Rapid-Production, 6½-Inch

Pickersgill Bros., Ltd., Keighley, England. [Vol.62, p.94E.]

Simplicity of design has been aimed at. Features include a reserve of belt power and ease and simplicity of the feed controls.

The gap bed, which is 6 ft. long by 10 in. wide by 6½ in. in depth, is of box section, supported by cross stays. Work 3 ft. in length can be admitted between the centers, and 9 in. in diameter can be swung over the saddle. It swings 23 in. in diameter in the gap. The high-carbon steel spindle runs in parallel bearings lined with phosphor-bronze.

Longitudinal and cross feeds are operated by a drop lever, which automatically locks itself in position and

can be released by pressing the knob inwards. The feeds are interlocked. Screw-cutting is done through an independent train of wheels, and the screw is in action only when required for screw-cutting. The net weight is 12½ cwt.

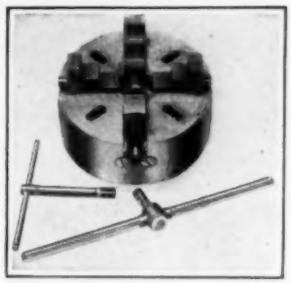
— 23 —

Chuck, Lathe, Improved

S. H. Hamer, Halifax, England. [Vol.61,p.192E.]

In the improved lathe chuck of American type being placed on the market, the new feature consists of the method of holding the screw which moves the jaw by means of a collar fitting into the hole where the screw works.

The collar is held by cheese-head setscrews in position to



take the thrust of the chuck screw. The opposite end of the screw, which operates the jaw, comes against a steel bushing which is fitted into the center hole of the chuck.

The advantages claimed include the absence of the usual neck formed in the screw and the possibility of easily removing the collar should the jaw and screw become locked together by dirt.

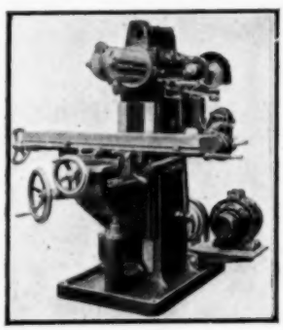
Milling Machines

— 24 —

Milling Machine, Full-Universal

C. Gambin & Cie, Billancourt, France. [Vol.62,p. 95E.]

Of the mechanical features of the milling machine, the chief is the full-universal milling head, by means of which the cutter can be presented to the work at practically any angle. This head



has purposely been made as massive as possible and overhang has been avoided in the driving gears. The head is carried in the frame of the machine in a hole bored to suit, and in this it slides in a horizontal plane. In addition, it can be rotated on its own axis to any desired position.

The cutter spindle can itself be rotated on a cross axis and locked as required.

The machine drive is by cone pulleys, with or without back gearing, and the speed of the driving spindle is reduced by the gearing in the head. The spindle speeds are arranged in geometric progression. A gear pump is provided for lubrication purposes, and the usual accessories, such as dividing heads, rack-cutting device, etc., are available. The machine weighs 4,400 lb. and takes approximately 4 hp. for driving purposes.

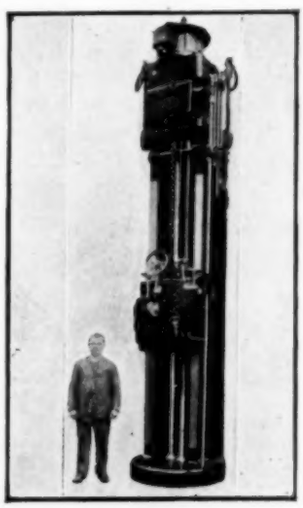
— 25 —

Milling Machine, Keyway, Portable, Two-Spindle

W. Asquith, Ltd., Halifax, England. [Vol.62,p.78E.]

The machine is built for milling the keyways in rotor frames, the smallest size rotors which can be machined being 3 ft. 6 in. in diameter.

The machine is lowered inside the rotor frame, the operator having control by means of levers located near the top. In the case of the smaller rotors the frames can be mounted one on top of the other, several being milled at the same setting.



The main column and the circular base are a single casting, slots being provided at the rear for fixing stay brackets. The milling spindle slide is balanced by weight inside the column. The two high-carbon steel milling spindles, 2 in. in diameter in the driving part, are obliquely opposed to one another in separate planes. The ends of the spindles are adapted for receiving milling cutters of the face and side type.

Start and stop of the spindles are obtained by means of push buttons. The drive is by 10-hp. constant-speed vertical motor, mounted on top of the column, through a three-speed gear box. The necessary feed changes for milling are contained in this box also, together with the clutch gear for changing from milling to quick traverse. The machine stands 16 ft. 4 in. in height and weighs 4½ tons.

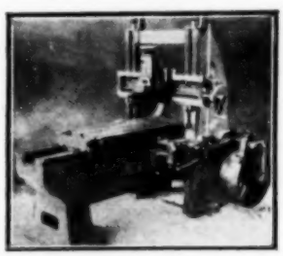
Planers and Slotters

— 26 —

Planer

Pollock & Macnab, Ltd., Bredbury, near Stockport, England. [Vol.61,p.166E.]

The planer is for work 36 in. in length by 20 in. in width by 20 in. high, and is of the two-belt-drive type with sliding cam for shifting the



belt. The bed is of box section, providing three V-guides to the table, and is 3 ft., 7 in. long by 1 ft., 4½ in. wide, the Vees being at 9½ in. centers. Automatic oiling devices are provided.

The machine is arranged for automatic horizontal feed, while vertical and angular feeds can also be supplied. The net weight is 25 cwt.

— 27 —

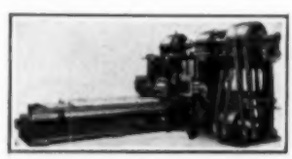
Planing Machine, Rail

C. Redman & Sons, Ltd., Halifax, England. [Vol.62, p.119E.]

The planer is adapted for planing points, crossings and switches, and has a capacity 4 ft. wide by 1 ft., 8 in. high by 12-ft. stroke. The bed is double-walled its full length. Double-helical teeth are used on the first reduction gear. The cross-slide is clamped to the housing by inside and outside plates and bolts, and all gearing and the racks are of steel.

The V-type bed, 19 ft. long by 19 in. deep, is of box section braced between the housings where strain is encountered. Roller disks running in oil wells cast in the bed provide lubrication. Long adjustable gib strips prevent lifting. The cross-slide is gripped to the housings by means of eight bolts, four inside and four outside. It is elevated and lowered by hand motion with worm and wormwheel gears. The two tool-boxes are of the cross T-slot pattern, carrying two tool-holders each, so that four rails can be planed simultaneously.

The four-belt drive has been designed to give ample power with ease of movement. A 40-hp. driving motor is connected to the countershaft by flexible coupling and mounted on top of the machine. The drive from the motor is through a two-change speed box with slid-



ing gears, giving cutting speeds of 20 ft. and 40 ft. per min. respectively, with a constant return speed of 80 ft. per minute. The shafts for the overhead motion run on roller bearings. The all-steel belt-shifting mechanism gives a straight-line movement to the belt forks.

A locking device prevents the accidental starting of the table, and the machine can be started or stopped from either side. It occupies 26 by 23 ft., 6 in. of floor space and weighs approximately 22 tons.

— 28 —

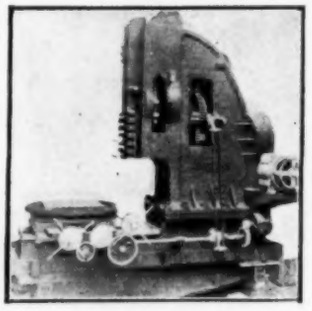
Slotting Machine, Heavy-Duty

F. Berry & Sons, Sowerby Bridge, England. [Vol.62, p.100E.]

The machine is adapted for machining very heavy crank work for engines and similar products. It admits work 6 ft. in diameter and 2 ft., 9 in. in depth. The body is cast in two parts.

The lower portion forming the bed is 17 ft., 6 in. in length by 9 ft. in width. The depth of the strengthening web underneath the floor line being 2 ft. 3 in.

Square guideways are provided for the slide and work table. A projection, cast integral, forms a seat for the driving motor. The longitudinal and transverse movements of the table slide are each 3 ft. The cast steel ram is balanced by wire rope and weights and can be stopped in any position. It is actuated by crank disk, connecting rod and steel elliptical gear of 2½ in. pitch,



giving quick return. The longitudinal feed is by means of a screw, worm and phosphor bronze wormwheel located inside the bed. The feed wheels are all of steel, ⅞ in. pitch. Table movements are obtained from a 3½ hp. reversing motor placed immediately underneath the main driving motor. The latter is of 25 hp. and 3 to 1 variable speed. A case-hardened steel worm on the motor shaft drives a phosphor-bronze wormwheel of 65 teeth which is bolted to a flange on the main driving shaft. The machine weighs 41 tons.

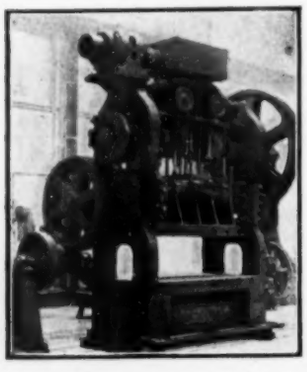
Presses

— 29 —

Press, Clipping, Double-Crank

J. Hands & Sons, Ltd., Birmingham, England. [Vol. 61,p.154E.]

The press, driven by a 20-hp. motor, is used for clipping motor-car crankshafts at one operation. The pressure within ¼ in. of the bottom of the stroke is 250 tons.



The table is 6 ft. 6 in. between the uprights by 3 ft. 6 in. wide, and has an 18-in. gap in each side frame.

The moving slide weighs 3 tons and is balanced by wire ropes and weights. Worm gearing permits adjustment. The double-throw crankshaft is 8 in. in diameter and is made of high-tensile steel, heat-treated and oil-toughened. It runs in bushed bearings. The drive is through an all-steel sliding-block clutch, with inserted hard-steel driving faces.

A control brake on the left comes into action 10 deg. before the crank reaches its top position, acts completely on the down stroke to within 1 in. of the face of the die, and is then held open during the balance of the stroke.

The machine stands 14 ft. high, occupies a floor space of 14 ft. by 7 ft., 6 in. and weighs 39 tons.

— 30 —

Presses, Power

J. Rhodes & Sons, Ltd., Wakefield, England. [Vol. 62,p.68E.]

The line of presses supplied to the Ford Motor Co., to specification, are identical in design and type to those used at the factory of the firm in Detroit, the Rhodes firm copying the American machines exactly in all features.

All the presses are arranged for direct motor drive, the punch presses being made in three sizes, weighing respectively 26 cwt., 40 cwt. and 56 cwt. Another type of press, supplied in one size only, weighs 41¼ cwt.

Other Machine Tools

— 31 —

Cutting-Off, Ending and Centering Machine, Axle, Duplex

J. Holroyd & Co., Ltd., Milnrow, near Rochdale, England. [Vol.61,p.193E.]

The machine is designed for use on railway axles and similar work for doing the three operations indicated simultaneously on the two ends.

The work is held stationary in two vises which are adjustable along the bed by

hand, while the various cutting tools are revolved in two headstocks that can also be adjusted along the bed. Cast-iron spindles in these headstocks run in capped bearings, with ball-thrust washers, and are driven by a 12-hp. motor with speeds ranging from 300 to 900 revolutions per minute. The centering spindles, 2 in. in diameter bored No. 4 Morse taper, are fitted inside the main spindles and are driven by gearing from the driving shaft at the back, the speeds of these spindles ranging from 60 to 180 revolutions per minute. The floor space occupied is 21 ft. by 4 ft., 6 in. and the net weight, without motor, is 6 tons, 6½ cwt.

— 32 —

Quartering Machine, Locomotive-Wheel

Cunliffe & Croom, Ltd., Manchester, England. [Vol. 61,p.153E.]

The quartering machine is designed for drilling and boring crankpin holes and for turning new or worn crankpins in position on wheels with either right- or left-hand crank leading.

The machine will admit wheels up to 72 in. in diameter, at a maximum gage of 4 ft., 8½ in., the maximum distance between centers being 8 ft., 6 in. It suits crank throws of from 8 to 18 in., the largest diameter of pin admitted being 8 in. and the maximum length of pin 14½ in. The drive is by two 5-hp. variable-speed motors, one at the rear of each headstock, with pillar-type controllers for speed variation.

All the angular sliding faces carry hardened steel

rules, with pointers for setting to the required throws. The equipment supplied with the machine includes two adjustable screw jacks for location purposes, truing-up cutter blocks and tools, pumps, tanks and chip guards.

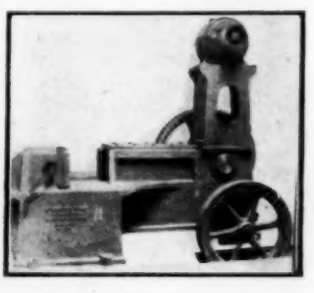
Other Machines

— 33 —

Bending and Straightening Machine, Horizontal, Motor-Driven

F. Berry & Sons, Sowerby Bridge, England. [Vol.62, p.2E.]

The machine is designed for bending steel girders, channels, angles and similar structural material, the capacity being up to 12-in. by 6-in. girders. The main framing has been ribbed and proportioned to withstand stresses and the various sections run on friction rollers fitted in the bed. The slide is made in two parts and can be adjusted to suit the different sizes of material by means of the large capstan handwheel. This handwheel actuates a pair of spur gears, one of which is keyed on a steel screw 6 in. in diameter with a 1½-in. pitch, square



thread, working inside the slide. The stroke of the machine is 1½ in., 25 strokes being made per minute. The

two adjusting blocks can be moved across the face of the resistance beam to a maximum distance of 4 feet.

Drive is from a 15-hp., constant-speed motor, running at 950 r.p.m., the motor being mounted on a box-section standard at one end of the machine. The machine occupies a floor space 11 ft. long by 6 ft. 6 in. wide and weighs 8 tons.

— 34 —

Bending Machine, Vertical, Motor-Driven

F. Berry & Sons, Sowerby Bridge, England. [Vol.62, p.94E.]

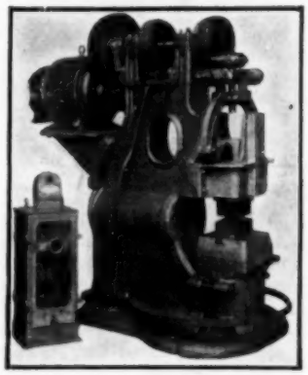
The machine is suitable for bending angle iron and tee iron and for constructional work in shipyards and similar places. It will bend hot angle iron 6 in. by 6 in. by ⅞ in. thick. The main frame of the machine forms a box-section casting and has a projecting baseplate on which is mounted the 20-hp. motor and the spur-reduction gearing. Four rollers, adjustable to suit the different sizes of iron to be bent, are employed, two gripping rollers which are geared together so as to insure the angle iron, tee-iron, etc., being fed forward; and two side bending rollers which are adjustable forward and backward simultaneously by means of handwheels and screws. The gripping rollers are driven by a case-hardened worm and phosphor bronze wormwheel and broad spur gearing.

— 35 —

Hammer, Forging, 300-Lb., Motor-Driven

J. Spencer & Co., (Keighley) Ltd., Keighley, England. [Vol.62,p.21E.]

The hammer is designed for general or repetition work. It will weld round or square bars up to 5 in., and forge rounds or squares up to 7 in. The drive is from a 15-hp. constant-speed motor through a raw-hide pinion, the motor being carried by a bracket bolted to an angular facing on the machine framing. A control panel is provided. An automatic brake insures sensitive control and



allows single blows to be made when necessary. A 10-in. hole in the hammer body allows long bars to be worked readily.

A separate adjustable anvil block is provided with adjustable top and bottom dies and is held in position by four bolts. The design allows a maximum whip stroke of 18 in., the length of the stroke being adjusted to suit the work by means of the crank-plate connection at the top. The guideways for the ram have adjustable strips for taking-up wear. The parts are case-hardened where necessary. The connecting rod is brass bushed. The floor space occupied is 5 ft. by 3 ft. 4 in. The machine weighs approximately 3 tons.

Measuring, Gaging and Testing Equipment

— 36 —

Gages, Dial, Zeiss

Dowdings Machine Tool Co., Bush House, London, W.C., England. [Vol.62, p.43E.]

The dial gages are intended for use in a number of ways with and without special fixtures, and are available with metric or English graduations to specifications.

A die casting forms the housing for the platen carry-

ing the gearing, and from this casting only the feeler point and the top project. The rack and pinion are of chrome-nickel steel. The dial is graduated to 0.0001 in., and the slot to 0.1 in., the latter being arranged with a pointer to complete the revolutions. The graduated rim of the dial is movable for setting to zero. Backlash is taken up by springs.

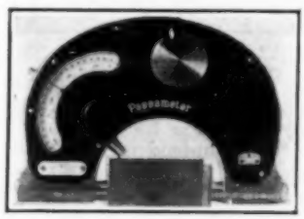
An eye at the back permits fastening the instrument to standard jigs, but a special back can be supplied if desired. The arrangement illustrated is intended for rapid determination of the thickness of machine parts, sheet metal, mica, or even paper.

— 37 —

Passameter, Zeiss

Dowdings Machine Tool Co., Bush House, London, W.C., England. [Vol.62, p.43E.]

The instrument is in reality an adjustable snap gage combined with an indicator and a device for setting tolerances. It is adjustable regularly between ¼-in. limits, and is available for the application of the limit system of inspection. Sizes are



produced to measure up to 6 in. The body is a steel forging containing the indicating mechanism, which is hermetically sealed through an aluminum cover, a stud enabling the instrument to be fastened in a holder.

To set to a given size the anvil adjustment is opened by unscrewing a cap, and the stationary anvil is adjusted to the standard until the index hand connected with the movable anvil is at zero. This setting can be sealed. By the removable of another cap, adjusting rings can be reached for setting hands for the upper and lower limits required, though these hands are not shown on the form of instrument illustrated. This setting can also be sealed. The indicator mechanism is of the combined lever and gear type, and the anvil is pressed against the work by means of a spring, another spring taking up the backlash. The pinion is chrome-nickel steel.

The scale will read to 0.00001 in. in the smaller sizes, and to 0.002 in. in the larger sizes. Special scales are available to specifications.

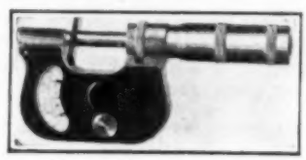
— 38 —

Micrometers, Zeiss

Dowdings Machine Tool Co., Bush House, London, W.C., England. [Vol.62, p.43E.]

The micrometers are made in a wide range of sizes for inside and outside measurements and are available in plain or dial design. Each has a vernier reading to 0.0001 inch.

Adjustment is provided to set the zero reading exact, and a spring arrangement in-



cluded in the body limits the pressure that can be applied between the work and the anvil.

The instruments are produced in quantities, and are checked by slip gages and special measuring machines. The line includes micrometers for thread measuring with sets of special anvils to cover a range of pitches.

The dial micrometer is especially designed for use in inspection rooms, stores, and places where numerous quick readings are desired. The instrument illustrated can be used as a limit gage to advantage. The instrument can be set oversize or again adjusted to zero when desired.

— 39 —

Gages, Depth and Protractors, Zeiss

Dowdings Machine Tool Co., Bush House, London, W.C., England. [Vol.62, p.43E.]

Depth gages of the sliding-bar type are available in three styles, straight, oblique and universal, the last named being illustrated.

Dovetail-form guides are provided, play being prevented by a flat spring. The end of the bar bears a needle point for measuring into small recesses, and as this point can be replaced there is no need to adjust by grinding off the crossbar of the tool. The inch scale is graduated to 64th, no vernier being used. For distinctness

the lines are very short. Metric graduations are available to specification.

The two angular positions are controlled by notches. The bar has three gradua-

tions, which, in the oblique position, show the vertical distance.

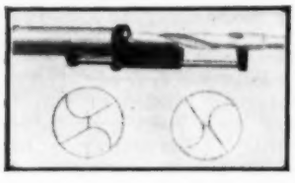
The protractor is provided with an optical device secured on the frame to do away with the necessity of having a separate magnifying glass for close reading.

— 40 —

Gage, Twist-Drill, Zeiss

Dowdings Machine Tool Co., Bush House, London, W. C., England. [Vol.62, p.43E.]

The drill to be tested rests in Vees against a glass template marked with spider lines. These lines are inspected through a magnifying glass. The central spider



line or diameter is employed for gaging the position of the point of the drill. Another line position, obtained by rotating the point 90 deg., is used to test the point width.

— 41 —

Hardness-Testing Machine, Diamond

Vickers, Ltd., Broadway, Westminster, S. W., England. [Vol.62,p.73E.]

The machine is of the plastic indentation type, which while working on the Brinell principle employs a diamond for producing the impression.

The machine consists of a column with ways at the front on which can slide an adjustable stage similar to that used on a milling machine. Above the stage is a thrust rod with tube which carries the diamond indenter at its lower end. Under the control of the cam the indenter is pressed downward

by means of a weight hanging at the end of a simple 20 to 1 ratio lever.

The diamond is cut to the shape of a square base pyramid, the included angle across the facets of which is 136 deg., and the hardness is calculated by dividing the load by the pyramidal area. The hardness numerals obtained are identical with the Brinell readings which would be obtained with the ordinary ball Brinell test under ideal conditions. The impression is read by means of a measuring microscope of special type.

Woodworking Machinery

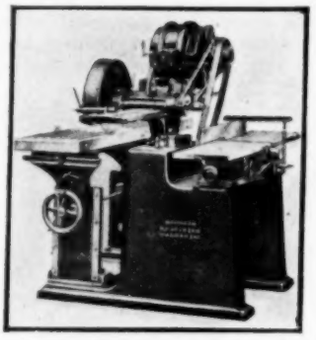
— 42 —

Woodworker, Improved

Dominion Machinery Co., Ltd., Halifax, England. [Vol. 62,p.38E.]

The improved Super-Elliot woodworker is arranged so two men can be engaged simultaneously at opposite sides, and is adapted for carriage and wagon building shops, pattern shops and similar purposes.

The machine is self-contained, being driven by a 3-hp. motor mounted on a carriage which moves on a slide having a traverse of 26 in. The motor and slide swivel through a complete circle on a turret base provided on the main casting, and may be locked as required. The motor runs at 1,800 r.p.m., the saw spindle, at 3,200 r.p.m., and the planer-cutter block at 5,000 r.p.m. The saw spindle has a rise and fall of 3 in., obtained by a screw. Ripping can be done up to 6 in. thick, and surfacing up



to 12 in. wide. For cross-cutting up to 26 in. by 6 in. the slide is turned square with the table, stops being provided. A 16-in. diameter saw permits the cutting of 6-in. lumber. Overall, the machine measures 5x4 ft. and weighs 13½ cwt.

— 43 —

Woodworker, Universal

Wilson Bros., Ltd., Leeds, England. [Vol.62,p.87E.]

The machine, which is of larger capacity than is usual, is a combination of a circular saw bench with rising and falling table, surface planer, vertical spindle moulder, and hollow chisel mortising and boring machine. Each unit is instantly available, without dismantling any other unit.

Vertical adjustment is obtained by handwheel and screw. The cutterblock is of new safety circular pattern—inverted-wedge type with two blades—the block and spindle being in one piece, machined from a tough steel forging and balanced.

The saws are mounted on one end of the planer spindle, the saw collars being placed close to one of the bearings.

When the moulding spindle is used the planer table is raised above the saw table, thus enabling circular work to be moulded. The use of hollow square chisels and augers for mortising is another feature. The boring and mortising table is fitted in front of the machine. The augers are carried in the end of the planer spindle; a detachable bracket fitted to

the main frame holds the hollow chisel when mortising.

The vertical spindle moulder is carried on the end of the main frame and works through the front planer table. It lowers clear of the table top, and a loose ring and plate fill the center hole when the spindle is not in use. The spindle and pulley are made in one piece, machined from a steel forging. The spindle has vertical adjustment by handwheel and screw.

Small Tools

— 44 —

Tools, Small

B.S.A. Tools, Ltd., Sparkbrook, Birmingham, England. [Vol.62,p.120E.]

Three small tools, an adjustable reamer, an expanding reamer and a counterbore have been added to the company's line of small tools.

The inserted-blade adjustable reamer can be adjusted as the blades wear and accuracy maintained until the blades are worn out, when new ones can be fitted to the original shank. Adjustment is by means of two cone nuts. The reamer is made in sizes ranging from ⅝ to 2 inches.

The expanding reamer is claimed to be particularly useful for holes that need enlarging to fine limits above the standard reamer size. The reamer is split, a taper in the end, manipulated by means of a key, adjusting the

tool to the required expansion. These reamers are made of carbon steel on a range of sizes from ⅝ to 1½ inches.

The counterbore consists of three units, shank, cutter and pilot. One shank is made for each group of sizes, and all cutters and pilots in each group are standard. The

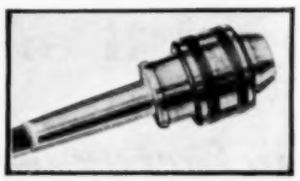
counterbores are made from heat-treated, high-speed steel in a range of sizes from ¾ to 3 inches.

— 45 —

Chuck, Quick-Change

B.S.A. Tools, Ltd., Sparkbrook, Birmingham, England. [Vol.62,p.121E.]

The chuck has been designed to meet the demand for an accurate chuck of this type. The body has a standard Morse taper shank. The outer sleeve, when in the bottom position, holds pawls in engagement with the



shank of the tool or sleeve. When moved into the top position, the pawls are pushed out of engagement, thus releasing the tool or sleeve. This operation can be performed while the chuck is revolving.

The chuck is easily and quickly disassembled, and all parts are interchangable.

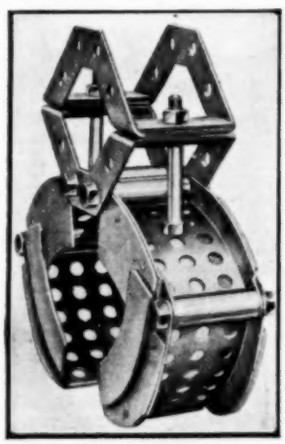
Miscellaneous Equipment

— 46 —

Guard, Milling-Cutter

J. Broughton, Vere Street, Birmingham, England. [Vol. 62,p.29E.]

The cutter guard is built up completely of sheet metal and is secured to the arm of the milling machine by means of a split hexagon clamp with bolts. This clamp



carries two pins which may be placed in four different positions and which support the guard proper.

The material in the guard is perforated so the cutter can be seen and a pipe for the coolant inserted. The clamp fits arms of any size from 2 to 4 in. in diameter, and by adjustment of the fingers or segments it is possible to guard cutters of any size from 2 to 10 inches.

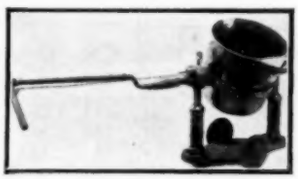
— 47 —

Ladle, Foundry, Self-Leveling

Constructional Engineering Co., Ltd., Charles Henry St., Birmingham, England. [Vol. 61,p.228E.]

The chief feature is that the ladle trunnions are carried on pillars, each resting on a coiled spring. The springs are compressed to the full extent when the ladle bears a full charge, but gradually lift as the metal is poured, maintaining a constant pouring level.

In addition, renewable lips are bolted to the body of the



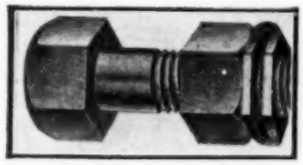
ladle, together with refractory skimmers which prevent surface slag being poured into the mold. The appliance is intended for use by one man, the same handle being employed both for trailing and for tilting. A safety catch operated from the handle prevents accidental tilt. Special disk wheels running on ball bearings and having conical rims to minimize friction are provided. The ladle is manufactured in sizes between 6 cwt. and 12 cwt. capacities.

— 48 —

Locknut

Vibro Locknut, Ltd., 35 *Copthall Avenue, London, E.C., England.* [Vol.62,p. 14E.]

The locknut is made of spring steel which is folded over so that a space is left between the two thicknesses of metal and is screwed on the bolt in the ordinary way until it bears against the nut to be locked. Externally it is hexagonal to correspond with the nut, one side of the headstock being turned up. The sections of steel used are graded according to the application. It is claimed that the nut locks automatically in six places, the spring action locking the top and bottom of the threads, a wedge action locking the sides and the twist due to distortion locking the opposite sides,



this locking action operating immediately pressure comes from the ordinary nut.

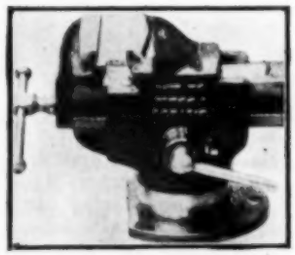
The nuts can be slackened back by means of a spanner, removed and used again. The nuts are made for the firm by Herbert Terry & Sons, Ltd., Redditch, England.

— 49 —

Vise, Swivel, Handy

W. Asquith, Ltd., Halifax, England. [Vol.61,p.184E.]

The Mould swiveling vise is intended for use in the



toolroom by diemakers. It can be rotated on its base through a complete circle after the work has been once gripped for setting to the most suitable position.

The jaws are 3¾ in. in width by 3 in. in length and will admit work 1½ in. in diameter into the throat. The weight is 18 pounds.

THE equipment listed in the preceding section of the review issue is that described in the European edition of the *American Machinist* during the six months ending with the last issue in May, 1925.

The same plan has been followed in condensing the original descriptions that appeared in the European Shop Equipment News Section and giving each a page and volume reference for the reader's convenience.

The nomenclature is that appearing in the European edition, no attempt having been made to re-classify and re-name the machines to conform to American practice.

Comparison between trends of design here and abroad in the same issue affords opportunity to broaden the vision of the designer and equipment manufacturer, and to study points of construction and application that may be turned to advantage.

The number of items marketed during the term is not large as compared to the total of the American review, but there is a sufficient number to indicate trends and to show what is being accomplished toward reducing manufacturing costs.

The locomotive shop has received particular attention with machines developed for axle, tire and cylinder work. One manufacturer has duplicated an American press, to order, for automotive work. Grinders show some important developments. A new hardness-testing machine and gaging tools are on the market.

European Edition

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The Business Barometer

This week's outlook in Commerce, Finance, Agriculture and Industry based on current developments

By Theodore H. Price
Editor, *Commerce and Finance, New York*

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THE sustaining power of a cheap and abundant supply of lendable credit was impressively demonstrated in the stock market last week. It has made the financial rehabilitation of Dean, Onativia & Co. a probability, and has converted one of the most important failures that ever occurred in Wall Street into an affirmative influence for higher prices. The result is that everyone is talking about the recuperative power of the market, while those who have speculative specialties to sell are marking them up in the hope of attracting buyers.

But this is not to say that the public has been re-attracted to the Stock Exchange in large numbers. Too many are away on their summer vacations, and of those who remain at home but few seem to think that prices are sufficiently low to leave room for much advance. There is also to be considered the great increase in the number of different security issues that are now traded in on margin or for cash. Including the Stock Exchange list, the Curb Market list and the securities dealt in over the counter, there are so many that it is almost impossible for the market to move as a unit and the mass formation and tactics that formerly made such an appeal to the speculative imagination are not present.

Oil stocks go up one day and the next will see an advance in "motors" or "chain stores" or "coppers" or "railroads," but none of these groups move in unison, and the consequence is that there are no longer any days of general excitement when everything goes up.

A diagnosis of such a market is, of course, difficult and a worth while prognosis is almost impossible, but despite the advances shown by certain selected groups, it is questionable whether the average price of *all* the securities actively traded in is much higher than it was two months ago when the "churning" of prices first commenced.

Just why the American public no longer dances when it is piped to is hard to say, but a partial explanation is that the post war education in economics that most people have received has made them more discriminating than formerly. Therefore, cause and effect are more intelligently correlated, balance sheets are more patiently studied and the horizon is more carefully scanned for signs of trouble.

And the conscientious student must admit that the present ease of money is about the only positive factor in favor of higher prices for securities. That it is likely to continue for some time yet there is no denying. The statement of the Comptroller of the Currency published last week shows that the national banks are in a plethoric and liquid condition. The Federal Reserve System's weekly report published on Friday morning also indicates a super-abundance of lendable credit. The reserve ratio stands at 76.1 per cent and earning assets are only $1,042,753,000 out of total resources of $4,781,488,000.

But when this is said about all that can be said in favor of higher prices for stocks and bonds is said, and we are left facing the certainty of a decline if anything happens to disturb confidence or tighten the money market.

For it is indubitable that in many lines the productive capacity of this country and Europe is largely in excess of consumption even with high wages, and that it is only by curtailing production that the supply can be kept within the limits of the demand.

Organized curtailment by mutual agreement being illegal under the Sherman law, the result is that the weaker concerns are being gradually driven to the wall or swallowed up by the stronger, while profits as well as production diminish. The latest appeal for curtailment is an advertisement urging the stockholders in the copper producing companies to demand that the managers of their properties shall restrict production so that prices will advance.

But economic law rarely acts suddenly in such cases, and the markets remain, as always, subject to two sets of influences that may be differentiated as general and specific. Within the latter class the weather and the probabilities of the harvest may be grouped. Thus cotton is higher on some disconcerting crop news from the Southwest and the skepticism with which, upon reflection, the Government estimate of July 2d is regarded.

Grain has also been steadier for reasons that are similar. They include a Government report which puts the presently indicated corn crop at three billion bushels and the total production of wheat in the United States at 680,000,000 bushels. Sugar has declined a few points further but is wonderfully steady in view of the reports which indicate a Cuban crop in excess of 5,100,000 tons.

Copper is described as bashful because it hestitates to advance and gives way on any pretext. Rubber has been above 90 cents in a market that is cornered and artificial.

Wool is really higher, although no one seems to understand why. Distributive trade is normal, but not satisfactory to those who crave abnormal activity.

It might indeed be said that the most salient feature of the present outlook is the lack of anything that approaches commercial excitement. There is enough business passing to keep most people employed, but they are not too preoccupied to complain or to look "before and after and sigh for what is not." Hence they are careful, but this carefulness is the surest guarantee against serious trouble that can be had.

What's Doing in Industry

The second week in the month finds the machine tool industry progressing under favorable conditions. New business has materialized and inquiries have appeared that seem to indicate a continued activity for some time to come.

New York again comes to the front with a report showing a definite increase in new orders and more activity on the part of prospective buyers seeking equipment. The railroads have favored this market of late, more than one substantial order being placed in the past ten days. Industrialists keep up a more or less steady demand for miscellaneous tools and shop equipment. The Mid-West continues to be a good market, with Cincinnati showing a larger number of fresh inquiries than has been the case in some time. Dealers in this section view the situation with genuine optimism.

Chicago reports continued activity, with especial mention of the railroads and general construction industries. In Indianapolis the demand is reported fair, with inquiries coming from the automotive trade and from municipal sources. Buffalo has little to report for the machine tool business, though general industries are active and are expected to purchase equipment soon. In Canada the demand has slowed up to some extent, although construction of roads and other public improvements provide a market for certain types of machinery.

The most encouraging sign in the whole industrial picture today is the abundance of lendable credit and the apparent easiness of the money market. This makes for better business conditions in all lines.

The Industrial Review

Progress of the machinery and machine-tool business in various parts of the country

THE following reports gathered from the various machinery and machine tool centers of the country, indicate the trend of business in these industries and what may be expected from the future:

Canada

While prospects for the future are bright, the present demand for machine tools in Canada is quiet. Buying is only in small lots for immediate requirements. Very few orders are being placed by railroads. On the other hand, the automotive industry is well employed and a number of the larger engineering plants have orders of considerable size on their books.

Owing to a slackening of orders, the blooming and billet mills, one blast furnace and the open hearths of the Sydney plant of the British Empire Steel Corporation were closed on June 27. Eight hundred men in Winnipeg were given an enforced holiday as the result of the closing down of the Weston shops of the Canadian Pacific Railway from June 27 to July 6.

With the prospects very bright for an excellent crop in Canada this year, the agricultural implement factories are becoming very busy. At the Massey-Harris plant at Brantford, Ontario, it has been found necessary to run a portion of the plant overtime.

June building permits totalled $33,000,000, an increase of $7,000,000 compared with June last year. The volume of building planned for the balance of the year is well above last year.

Some benefit is likely to result to Canadian automobile manufacturers from the trade agreement which has just been concluded between Canada and Australia. Canada is given the intermediate tariff on motor car parts, including the whole chassis, except the rubber tires, at ad valorem rates of 7½ to 10 per cent.

Chicago

Continued activity in the Chicago machine tool industry prevails in practically all lines with the exception of wood-working machinery, which remains without much improvement. The Chicago board of education is ready to announce its requirements for the equipment of the Carl Schurz School and five junior high schools, which will include most of the tools employed in tech school instruction.

The report that the Illinois Central Railroad will be in the market for a large quantity of tools and special machinery to equip its extensive new shops located at Paducah, Ky., has been given considerable publicity, with the result that an encouraging volume of new business is expected. Other railroads are buying from time to time to complete their equipment, but these purchases are mostly of used tools in small lots.

Mining machinery dealers report a dull situation, with the amount of business for the first six months of this year about on a par with the same period of 1924. No improvement is looked for in the near future owing to the unsettled conditions in the coal fields. Equipment and tools employed in road building have been, and continue to be, in good demand.

From all sources the outlook in the machinery industry, with the exceptions noted, is reported to be exceptionally favorable considering the season of the year.

Cincinnati

Machine tool manufacturers have received an increased number of orders in the past week, as well as a greater number of inquiries. Chicago and other cities in the Mid-West are buying more freely than cities in other sections, but still the orders and inquiries continue to be scattered over the country.

Agencies report a slight increase in the demand for machine tools during the past week, especially for smaller types. This branch of the trade also reports that inquiries are more numerous, and for this reason further increase in sales is expected.

An encouraging feature to both branches of the trade is the receipt of reliable reports of increased activity of users of machine tools. The automotive industries are still buying freely. A few export sales are reported during the week, but none of them are large. There have been some sales to the textile industries.

Purchases by railroads have been few in number but inquiries continue to come freely from this source. Local industries are not buying tools as freely as those in adjacent territory. A feature of the week was an increased demand for replacements, which is taken to indicate that there is greater activity among users of machine tools in various lines of manufacture.

New York

The local market has more to report at this time than it has had in several weeks. Business is not booming, to be sure, but there is a well-defined trend toward improvement.

Railroads appear to have taken the lead among buyers of machine tools and shop equipment. While industrial manufacturers are still buying miscellaneous equipment, theirs has been a steady trade, while the railroads have only recently come into the market. A partial list of the purchases made during the past ten days includes: A 50-ton bushing press to the Missouri-Pacific; a keyseating drill to the Southern Pacific; an automatic punching and shearing machine, and a 12-ft. pneumatic plate flanging clamp to the Chesapeake & Ohio; a mud-ring drill to the Chicago, Rock Island & Pacific. Industrials made the following purchases: The Southwest Light and Power Co. bought a 25-ton crane; the Ford Motor Co. bought a 44-in. sidehead boring machine; SKF Industries, Inc., bought a similar machine; the Link Belt Co. bought an 18-in. vertical crank slotter; the General Electric Co. took a group of machines including a jig borer, one 10-in. and one 6-in. vertical shaper, a 16 in. x 7 ft. lathe and a 26-in. vertical drill; the Fitzgibbons Boiler Co. bought a 15-ton, 80-ft. span crane and a similar machine of 60 tons capacity.

Export business has been good. A prominent German manufacturer has just returned home after placing orders in this country for several thousand dollars worth of American machine tools. Other German industrialists are also buying. England and France are buying very little right now.

A particularly good customer now is the industrial contractor. Building operation and public utility work is at a peak and there is a constant demand for drilling machinery, excavating and hoisting equipment.

Signs of a summer slump have not yet materialized. It is believed by many that this expected slowing up is only a state of mind, probably induced by the physical effect of the oppressive weather.

Indianapolis

Business continues fair in the machinery market here. This statement applies, however, to new machinery, for dealers in used machinery report a slump in their business. Not only is business holding up well, but manufacturers of both tools and machinery report more frequent inquiries that augur well for business later in the summer and in early fall.

Singular as it may seem, Indiana schools are responsible for a respectable volume of trade this summer. The manual training high schools and the technical schools of the state appear to be buying more than in previous years. The buying is being done now in order that all machinery may be delivered and placed before the opening of the fall terms.

Increased inquiries are noticed from the coal fields, where the prospects of a strike have livened interest. A demand continues from lumber manufacturers for special machinery and a few inquiries for special machinery

have come from the furniture trade. The actual sales are small, however.

Automobile demand continues better than last year, two local factories working almost to capacity. Some demand continues from Indiana's farm implement factories, but this is beginning to slow up.

Buffalo

Indications a fortnight ago that there would be increased activity in the machinery field here have been dissipated in the last week or ten days. While business was fair at that time, it has slowed up somewhat now. This condition, however, is expected during July and August and is causing no pessimism.

Machinery salesmen report the Buffalo and western New York industry in a healthy condition. They feel that this augurs well for fall and winter business. One dealer reported June to be the best month of the year for him but admitted that this was due to the closing of a fairly good order that had been pending for some time.

The demand for road building equipment, including cranes and shovels, has fallen off a little. In this particular line business has been exceptionally good since the first of the year.

The Salisbury Axle Co., of Jamestown, N. Y., has purchased in the last few weeks about $70,000 worth of machinery. Most of it was second-hand.

Little Chance for Metric Law

Preparations being made for another effort to secure metric legislation have less chance of succeeding than when the effort was made in 1921, it is believed in Washington. Ordnance officers think the chief objection to the English system has been met by the discarding of the fractions and putting decimal divisions of the inch into general practice.

Developments since the war, it is declared, have placed an overwhelming preponderance of world trade in the hands of the non-metric countries with the result that the use of the English system is increasing throughout Europe. It is making rapid strides in Italy, where formerly there was a fairly even division between the use made of the two systems. Progress is being made by the English units even in France. Recent visitors in French machine shops have found large use being made of equipment design for the use of the English system.

In 1921 the effort to secure legislation did not progress beyond the subcommittee of the Senate Committee on Manufactures. In fact the sub-committee did not regard the showing made by the proponents of the legislation seriously enough to formulate the adverse report which it had been decided to make.

The recent announcement that metric legislation would be pushed at the forthcoming session brought out an expression of opinion from a well-informed source that the chance of securing the compulsory use of the metric system in this country is quite hopeless.

Committee on Patent Office Procedure Makes Definite Recommendations

Report will suggest sweeping changes in methods

While questions of administration are the principal subjects being considered at the meetings of the committee on Patent Office Procedure, the working clause invariably comes up for some discussion. This is particularly the case now as two members of the committee will be members of the American delegation which will attend the International Conference at the Hague in September.

Among other views which have been submitted to the committee is that of the chemical industry to the effect that provisions should be made whereby those who hold American patents and who prefer to co-operate under them in the foreign countries, rather than in our country, should be compelled to grant a license or work them here. It is proposed that legislation provide "that two years after the issuance of any United States patent hereinafter granted, or at any time after the expiration of that period, if it is shown that the invention covered by such patent is being worked in a substantial manner in a foreign country by the patentee, or by others deriving the right from him, and that the owner thereof has not only failed to work it in a substantial manner in the United States, but has refused or refuses to grant licenses thereunder, upon such reasonable terms as would make it practicable to practice the invention in the United States, then on the petition of any reputable American citizen, corporation or partnership, exclusive jurisdiction is thereby granted to any United States Circuit Court of Appeals to investigate all appurtenant facts." The object would be to require the patentee to work or grant a license in the United States.

To Encourage Industry

The question also is raised whether we would not gain by requiring claims to be published in advance of the granting of patents and would it not be fair to require applicants, in cases of reasonable doubt, to demonstrate before a competent committee the facts that a careful adherence to the directions of the patent would produce the product claimed? While some of these points bear more on the chemical industry than upon other activities, it is contended that something should be done to prevent foreigners from using our patent system to hinder rather than to encourage industry.

Intensive work is being done by L. W. Wallace, W. H. Leffingwell, and Wallace Clark, of the committee's engineering sub-committee, on the administrative side of the work. This sub-committee has been meeting continuously for more than a week and has reached the conclusion that a sharp line of demarkation must be drawn between the administrative functions of the office, as distinct from the judicial and legal side. The sub-committee will recommend that an assistant commissioner, or comparable official, working under the direct supervision of the Commissioner of Patents, be vested with responsibility for the administrative conduct of the bureau.

Another recommendation is that the law be amended so that the chief clerk need not be an examiner. It is in the interest of good administration, experience has shown, to reduce as much as possible any changes of that official. The frequent changes in the office of chief clerk of the Patent Office are held to be due to the fact that an examiner usually is restive under administrative responsibilities. He prefers to return to his professional work as an examiner. The sub-committee is convinced that the shortcomings in Patent Office administration can be traced directly to the mixing of judicial and administrative functions.

An analysis of personnel turnover made on May first of this year shows that in the technical divisions of the Patent Office 27 per cent of the staff serves less than one year; 54 per cent serves less than four years, and 74 per cent serves less than ten years. The sub-committee in its report will point out that such a turnover among the technical employees in an industrial concern would disrupt its business. Better pay and the establishment of a training school for new employees will be suggested as measures calculated to reduce the turnover.

One essential to increased efficiency, in the opinion of the sub-committee, is proper housing. The sub-committee is convinced that no adequate solution of the patent office problem can be arrived at until the Bureau is housed in a building designed for its use, and the obsolete office equipment replaced with that especially constructed for the needs of such an activity.

Still Paying for War

In paying for the war, the people of Great Britain, during the year 1924, six years after the armistice, gave up 23 per cent, or almost a fourth of their entire national income, in taxes; the French people were taxed in the same year, 20.9 per cent, or more than a fifth of the national income; the people of Italy, nearly a fifth, or 19.2 per cent, and the Belgians 17 per cent, according to a preliminary report on a study of the inter-ally debt problem being made by the National Industrial Conference Board.

Total taxes in the United States, whose people are still carrying the burden of more than half of the loans raised here in connection with the war, amounted to 11.5 per cent of the national income in 1924, or nearly twice the proportionate amount they were paying in the year before the war. England's tax bill in 1924 also was nearly twice what it was before the war, when it equalled 11.2 per cent of the national income, while that of France increased only from 13.3 per cent of the national income in 1914.

Business Items

The Uddeholm Company of America, Inc., has been organized to take care of the American business of Uddeholm, Ltd., manufacturers of quality steels. The new concern will have offices at 52 Vanderbilt Ave., New York.

The National Automatic Tool Co., of Richmond, Ind., has purchased the patents, manufacturing rights and sales agency of the hi-duty drilling machines heretofore manufactured by the Minster Machine Co., of Minster, Ohio.

Botwinik Brothers, New Haven, Conn., have placed the entire stock of their various warehouses under one roof in the plant on Water Street (formerly the plant of the New Haven Carriage Co.) which they recently purchased. The new plant has over 150,000 sq.ft. of floor space.

Othniel Hitch, Indianapolis attorney, has been named receiver for the Stevenson Gear Co. The receiver was authorized to negotiate loans not to exceed $5,000 to be used as working capital in operation of the plant. Suit was filed some time ago by William S. Frye, head of a transfer company.

Federal incorporation has been granted in Canada to the Standard Diamond Drill, Ltd., to design, manufacture, buy, sell and deal in tools, parts, machines and mechanical apparatus. Headquarters of the company will be in Montreal, Quebec.

The Williams Tool Corporation, of Erie, Pa., brought together at the home office on June 3, 4 and 5, all of its salesmen and representatives in the various machinery and plumbing supply jobbing houses who cover the American and Canadian markets, for a three days conference.

In addition to the representatives of the Williams Tool Corporation, there were in attendance representatives of the following firms: Manning, Maxwell & Moore, New York City; E. A. Kinsey Co., Cincinnati; Joseph T. Ryerson & Son, Inc., Chicago; Charles A. Strelinger Co., Detroit; National Tube Co, Pittsburgh.

The Hoosick Foundries, Inc., of Hoosick Falls, N. Y., has been reorganized and has purchased the plant of the Walter A. Wood Mowing and Reaping Machine Co. The machine shop and foundries of the latter company will be operated by the Hoosick company. The Hoosick Foundries, Inc., is the outgrowth of the Hoosick Malleable Castings Co., organized in 1880 by Isaac G. Johnson. Henry Burden, of Cazenovia, N. Y., is president of the corporation. Plant executives are: C. N. Allen, works manager; Theodore Lang, superintendent of the malleable foundry; and M. N. Showecker, manager of the grey iron foundry.

The National Supply Co., of Toledo, Ohio, has been appointed sales representative in the northwestern Ohio territory for the Ex-Cell-O Tool and Manufacturing Co., of Detroit. This agency is in charge of H. E. Oatis. The Ex-Cell-O company announces the expansion of its plant in Detroit, the floor space of the factory being doubled and additional equipment installed.

Announcement has been made by H. C. Skitch, who resigned a few months ago as designing engineer for John T. Hepburn, Ltd., Toronto, of the formation of the Canadian Pump and Engineering Works, with offices at 161 Adelaide St., West, Toronto, for the manufacture of centrifugal pumps. The company will also represent the Chicago Pump Co., of Chicago.

Personals

LEONARD BARTLETT, formerly vice-president and general manager of the Reliance Machine and Specialty Co., of Boston, Mass., has become associated with McMahon & Co., of Worcester, Mass., as general superintendent in charge of manufacturing. Mr. Bartlett announces that the Bartlett friction driven drills will hereafter be manufactured by the McMahon company instead of the F. T. Daley Machine Works.

R. C. DAVIS, formerly with Hill, Clarke & Co., is now associated with the Ideal Machinery Co., of Plainville, Conn. He will travel in the Connecticut territory.

J. A. ROESCH, JR., has been elected president of the Steel Sales Corporation, of Chicago, to succeed the late Albert D. Dorman. Mr. Roesch was at one time connected with the Western Electric Co., Chicago, and with the Charles G. Stevens Co., Chicago.

HERBERT G. COOK has been appointed to represent the Railway Steel-Spring Co., on the Pacific Coast. He will establish headquarters at 582 Market St., in San Francisco.

B. A. TOZZER has been appointed district sales manager of the New York territory for the Niles-Bement-Pond Co., succeeding Harold F. Welch, who was recently transferred to Hamilton, Ohio, as general sales manager. Mr. Tozzer has been manager of the Cleveland sales office of the company.

A. E. R. TURNER, formerly manager of the machine tool plant of the John Bertram & Sons Co., Ltd., has been appointed manager in charge of the Cleveland office of the Niles-Bement-Pond Co., succeeding B. A. Tozzer.

SYDNEY BUCKLEY, chief engineer of the crane works of the Niles-Bement-Pond Co., at Philadelphia, has been appointed works manager to succeed V. O. Strobel, who resigned recently because of ill health.

CHARLES H. GRIFFIN, manager of the Deutsch Norton Gesellschaft, of Germany, is now at the home plant of the Norton Co., in Worcester, Mass., where he will make an intensive study of production methods.

T. J. LITLE, JR., chief engineer of the Lincoln division of the Ford Motor Co., has been nominated for the presidency of the Society of Automotive Engineers.

J. B. CHALMERS has been appointed superintendent of the new plant of the Youngstown Sheet and Tube Co., at Indiana Harbor, Ind.

J. L. OSGOOD, of the J. L. Osgood Tool Co., Buffalo, N. Y., returned on June 27 from a world tour, having been gone about six months. He interviewed many business men in France, Germany and England. Mr. Osgood reports money still tight in those countries but states that there is a disposition, particularly in the first two countries, to buy as soon as they are able, which he believes will be within the next few months.

ROBERT MILLER has been appointed manager of the Rocky Mountain sales district of the General Electric Co., succeeding Harry D. Randall, who is on leave of absence because of ill health. B. J. Wheatlake succeeds Mr. Miller as local office manager at Salt Lake City, and Mr. Randall has been assigned to special duties at the general office of the company in Schenectady. Mr. Miller's headquarters will be in Denver.

EDGAR A. JAMIESON, of the Jamieson Engineering Co. Ltd., Vancouver, B. C., has been appointed Western manager for the Combustion Engineering Corporation, Ltd., Toronto.

John B. Stevens, manufacturer and designer of machine tools, has established an office in New York City at Spring and Lafayette Sts. This office is in charge of Mr. Goldsmith.

ROBERT W. WOLCOTT, manager of the New Orleans branch of the Lukens Steel Co., has been elected president of that organization and will be located at the main plant of the company in Coatesville, Pa.

C. W. MOORE has been appointed to represent the Goddard & Goddard Co., of Detroit, in the Southeastern territory. Mr. Moore established headquarters at 1523 Candler Bldg., Atlanta, Ga.

Obituaries

THOMAS J. HYMAN, secretary and treasurer of the Illinois Steel Co., died in Chicago on July 5 following an operation. Mr. Hyman had long been associated with railroad and steel industries.

GEORGE A. WOOD, president of the T. B. Wood's Sons Co., Chambersburg, Pa., manufacturer of bearings and transmissions, died on June 17 at his home in that city.

HAROLD H. CLARK, chief engineer for the Wico Electric Co., of West Springfield, Mass., died at Ellsworth, Me., on July 8. Mr. Clark was at one time chief engineer of the United States Bureau of Mines, and was also associated with the General Electric Co.

Trade Catalogs

Protective Paints. The Truscon Laboratories, Detroit, Mich. A series of six booklets is now being prepared, the first of which has been published. The booklet, prepared for use in the filing cabinet, covers water proofing, damp proofing and oil proofing of building constructions. The specifications are given for application to particular needs, and a short discussion accompanies each case.

Pyrometers. Leeds & Northrup Co., 4901 Stenton Ave., Philadelphia, Pa. Catalog No. 87 on potentiometer pyrometers. This catalog covers quite fully pyrometer problems, and the various recording, indicating and automatic systems are discussed. Many illustrations show the types and uses of the pyrometer. Sample charts show the practical applications of the theory as discussed in the booklet. The prices of outfits and accessories are given in a separate section.

Lift Trucks. Lewis-Shepard Platform Corporation, 133 Walnut St., Watertown Station, Boston, Mass. A circular entitled "Lift Truck Platforms" announces a reduction in price of the lift-truck platform and box-type platform, specifications of which are listed.

Drinking Fountains, Shelving. Manufacturing Equipment and Engineering Co., Boston, Mass. Three booklets have been issued to describe the Meeco steel shelving and racks, sanitary wash bowls and drinking fountains. Each of the booklets is well illustrated, and specifications are given of many types in each department.

Forthcoming Meetings

American Railway Tool Foremen's Association. Annual convention, Hotel Sherman, Chicago, Ill., Sept. 2, 3 and 4. G. G. Macina, C. M. & St. P. Ry., 1402 Calumet Ave., Chicago, Ill.

International Railway General Foremen's Association. Annual convention, Hotel Sherman, Chicago, Sept. 8, 9, 10 and 11. William Hall, secretary and treasurer, 1061 W. Wabash St., Winona, Minn.

New Haven Branch of the American Society of Mechanical Engineers. Fifth annual machine tool exhibition, Sept. 8 to 11. Mason Laboratory. H. R. Westcott, chairman.

Association of Railway Supply Men. Annual convention and exhibition. Hotel Sherman, Chicago, Sept. 8, 9, 10 and 11. Earl E. Thulin, secretary, the Duff Manufacturing Co., 715 People's Gas Bldg., Chicago.

American Society for Steel Treating. Annual Convention and National Steel Exposition. Public Auditorium, Cleveland, Ohio. Week of Sept. 14. W. H. Eisenman, Secretary, 4600 Prospect Ave., Cleveland, Ohio.

Production Meeting Society of Automotive Engineers. Sept. 14, 15 and 16. In conjunction with American Society for Steel Treating. John Younger, chairman; C. F. Clarkson, secretary, 29 West 39th St., New York City.

National Safety Council. Fourteenth annual safety congress, Cleveland, Sept. 28 to Oct. 2. A. A. Mowbray, director, 168 N. Michigan Ave., Chicago.

Motor and Accessory Manufacturers' Association. Fall meeting, Prince Edward Hotel, Montreal, Canada, Oct. 14 to 16. M. L. Heminway, general manager, 250 West 57th St., New York.

National Industrial Advertisers' Association. Annual meeting, Chalfonte-Haddon Hall Hotel, Atlantic City, N. J., Oct. 19 to 21. W. A. Wolff, chairman, the Western Electric Co., 195 Broadway, New York.

Management Week. Conducted jointly by five societies—The American Society of Mechanical Engineers, The American Management Association, The National Association of Cost Accountants, The Taylor Society and the Society of Industrial Engineers. Week of Oct. 19 to 24. W. L. Conrad, of the A. S. M. E., is chairman of the joint committee.